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Clarifying Sugar by Soap.

M. Basset lately introduced to the notice of the Academy of Sciences at Paris, the process of clarifying sugar invented by Mr. Garcia, formerly a sugar refiner of Louisiana. It is founded on the well-known property of lime to combine with fatty substances, and produce alkaline soap. When the saccharate of lime is brought into contact with a solution of soda soap, the sugar is set at liberty, the lime combines with the fat of the soap, and the soda remains in solution in the liquid. When the clarification has been effected with an excess of lime, and the liquid has been skimmed a first time, it must be allowed to cool to below 104° Fah., and the solution of soap is then poured in while the liquid is being stirred. When the whole has been incorporated, it is again brought to the boiling point, after which the temperature is suddenly lowered again, by the suppression of the steam current, and the new scum is removed. The latter consists of a calcareous soap, which on rising to the surface has carried with it all the impurities and extraneous substances contained in the liquid. The process requires no new apparatus, and is stated to produce better sugar.

Milk Sickness—Its Cause and Cure.

As this disease is oftentimes fatal and wide spread in some sections of our country, any effectual remedy for it must be a great boon to suffering humanity. A correspondent of the *Prairie Farmer* asserts that its cause is the presence of cobalt in the soil of the pastures on which the cattle feed whose milk is said to produce the sickness. The remedy which he states has been successfully employed for it, is sulphuric acid, but he gives no directions as to its uses. We believe he is mistaken regarding cobalt in the soil, but he may be correct as to the remedy.

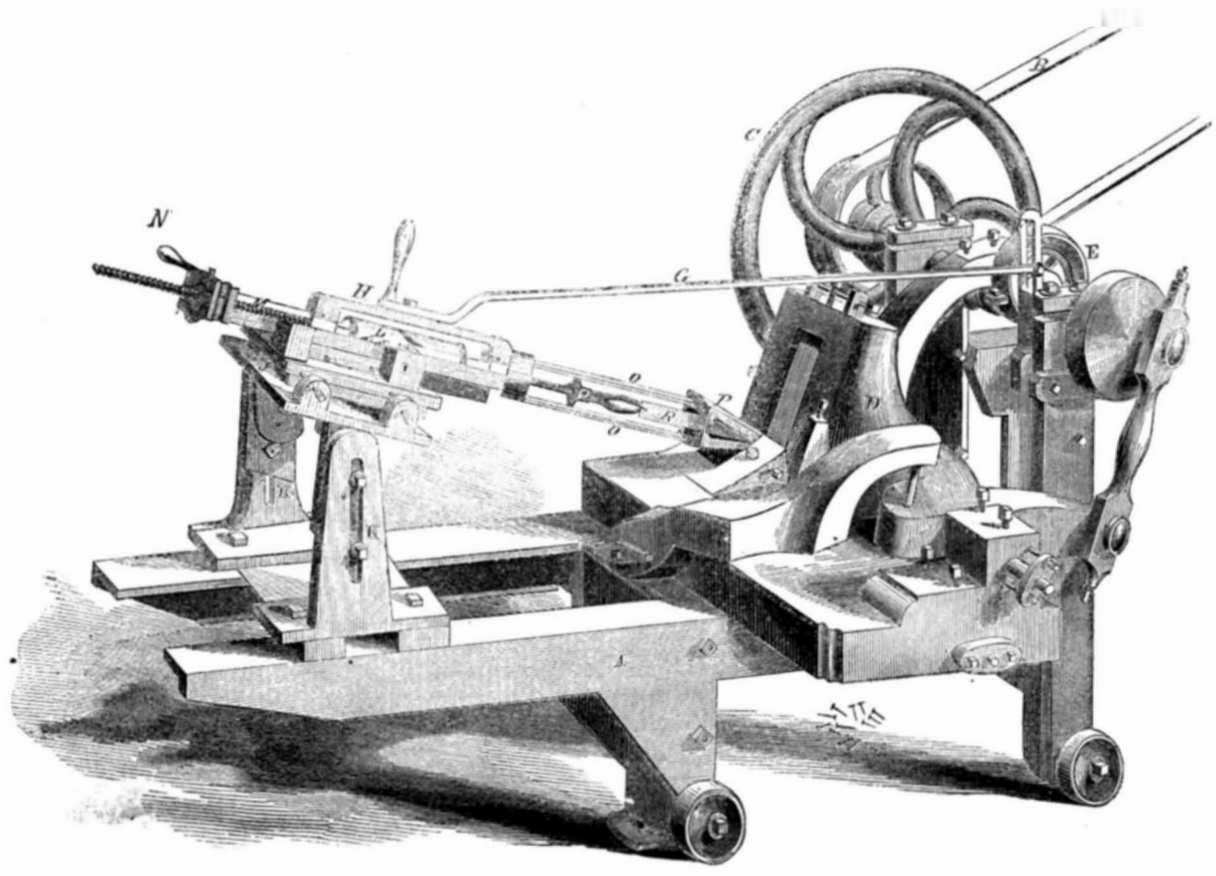
About five drops of sulphuric acid in a pint of water sweetened with a little white sugar, makes a pleasant and tart drink, which has been found very effective in curing dysentery, and it may be equally good for milk sickness. Very dilute sulphuric acid is no more dangerous than lemon juice in a beverage, therefore it may be safely tried for the above disease.

If there is cobalt in the soil of the meadows where the above sickness prevails, it can be easily detected by stirring some of the soil in clear soft hot water, allowing the sediment to settle, pouring off the clear solution and using a re-agent, such as ammonia, which will form a blue precipitate (if not used in excess) with the cobalt.

Philadelphia Iron Manufactures.

The Philadelphia *North American* states that in that city and neighborhood there are over ten thousand persons engaged in iron manufactures, whose products of industry amount to $12,857,000 annually.

SHERWOOD'S SELF-ACTING FEEDER FOR NAIL MACHINES.



The manufacture of cut nails has become an important item of national industry, and the machinery which makes the dies and operates them has attained in consequence great perfection, but the feeder or the portion which present the plate of metal to the dies, is usually that perfect but uncertain piece of mechanism called—a boy. The feeder which is represented in our engraving, and which can be attached to any nail machine, is the invention of John P. Sherwood, of Fort Edwards, N. Y., and was patented by him March 18, 1856. The following description will render the machine intelligible :—

A is the frame, which is of great strength, and mounted on four rollers, so that it can be moved from place to place, or to different positions in the workshop ; B is the driving belt, communicating power from the main shaft to the band and fly-wheel, C ; D is an ordinary nail machine, having on its shaft an eccentric, grooved, which receives a pin or roller projecting at right angles from a bar, G, and by the motion of this pin in the eccentric, it causes the bar to move up and down while the pin slides in the guides, F. The bar, G, is connected by a screw with the piece, H, which is free to move in guides on the plate, I, that can be adjusted to any position on the table, J, screwed or otherwise attached at any suitable angle to the standards, K, which rise from the frame of the nail machine, A, at suitable distance from the dies. To H, two bars, O, are attached, bearing or holding at their extremity a hollow guard, P, through which the iron to be cut projects. This piece of plate iron is seen at R, held by the pincers or teeth, Q, which are attached to a rod that is rigidly connected with the cam, L, in H, and also connected with the screw, M.

The operation and working of the machine is as follows :—When the dies are put in motion by means of the belt, B, the eccentric, E, is also rotated, and so moves the bar, G, and frame, H. The motion of this up and down, causes the cam, L, to revolve, by means of a fixed pin, and its own inclined slot, half a turn, so as to present the opposite face of the metal, R, to the dies, so that all that can shall be cut into nails, and no metal lost. When the handle, N, is up, this is all the motion that takes place, but when it is down upon the feed screw, M, this up and down motion also gives the screw a turn which feeds the plate, R, just the length of one nail under the dies. The operation which this feeder performs are, first, the turning of the plate accurately during the raising of the die, so that no time is lost, and it also feeds the plate at the same time to tho dies exactly the proper amount, this, of course, being regulated by the pitch of the screw, and the eccentric is so placed on the shaft that the plate and feeder are quite rigid during the process of cutting. It is a most valuable improvement in nail machinery, and will save much time and labor.

One of these machines is on exhibition at the Crystal Palace, New York, and any further information can be obtained by addressing D. W. Seeley, New York, who acts as agent for the patentee.

The Rectification of Spirits and a Cure for Drunkenness.

A correspondent asks us in the same letter for "a cure for drunkenness, and the best modern work on the rectification of spirits and the rectifying still." We have two theories in regard to the motives which prompted the above questions, so apparently antagonistic in their character. One is, that our correspondent is a manufacturer of spirits and is anxious to adopt the best means to cheapen and improve their qualities, and only asks for the first information to gratify an idle curiosity ; and the other, that he is a whole-souled philanthropist whose first endeavor is to cure his unfortunate fellow creatures of a most abominable vice, and in the event of failing in this to devote his efforts toward the removal of some of the many poisons contained in liquors, and thus in a great measure qualify their evil effects. We know of no modern work published in this country, exclusively devoted to the rectification of spirits and the rectifying still. Many works on chemistry treat of these subjects, but the latest and best information can probably be obtained from the last issue of *Ure's Dictionary*, under the respective heads of *Distillation*, *Fermentation and Spirits*.

The best cure for drunkenness that we can recommend is total abstinence from all intoxicating drinks. Where the unfortunate victim does not possess the necessary firmness to resist the temptation of the intoxicating draught, we would recommend those interested in his fate to first employ those delicate means which are dictated by the spirit of Christianity, to bring him to a proper sense of his condition before resorting to the forcible ones too often attempted. Instead of trampling upon him, strive to nurse into life the still glimmering embers of a nearly exhausted virtue. Think of him as a being whose frame is still capable of being agitated by feelings the most refined, delicate and intellectual, and endeavor to inspire in him a desire for those virtuous joys which he experienced before he became a victim to this terrible habit.

Six barks are now preparing at Chicago to make voyages to Liverpool. Last year one—and the first—made this voyage, and seemingly with success, or others would not be induced to follow the example this year.

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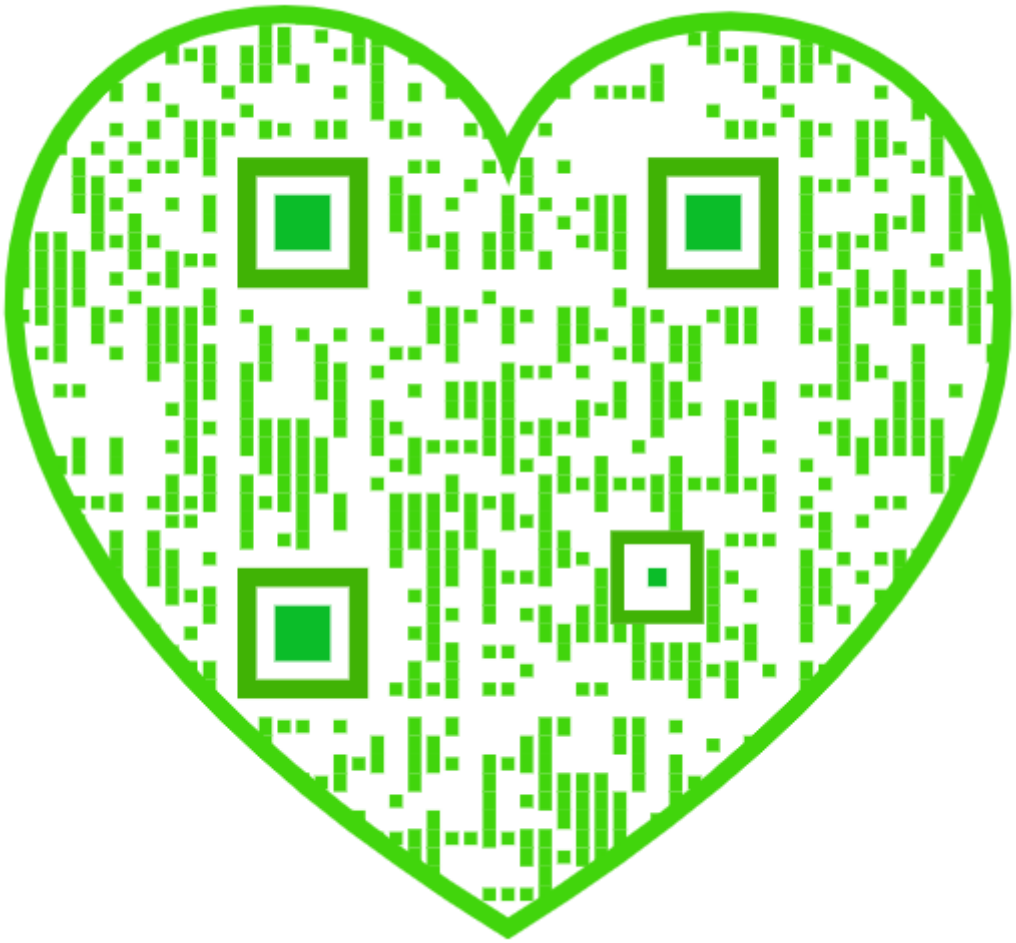

Issued from the United States Patent Office

FOR THE WEEK ENDING APRIL 6, 1858.

[*Reported officially for the Scientific American.*]

CORN HARVESTERS—Isaac V. Adair, of Varick, N. Y.: I do not claim the cutters, F, operating as shown, so as to effect, in connection with the stationary cutters, E, the desired result, irrespective of the peculiar arrangement and means employed for operating the cutters, F, for such cutting device has been previously used.

But I claim attaching the cutters, F, to the rods, a b, the rods, b, being provided with arms, k, and the rods and arms operated from the wheels, B, through the medium of the gearing, G i f g, and arms, c, when the above parts are used in combination with the stationary cutters, E, at the inner parts of the recesses, D, for the purpose set forth.

I further claim the bar, H, provided with the arms, q, in combination with the gate, I, the above parts being attached to the platform, A, and used in connection with a railing or guard, so as to operate as and for the purpose set forth.

I also claim the cutting device formed of the cutters, E F, connected with rakes or teeth, k, arranged to operate as shown, in combination with the discharging device formed of the gate, I, and bar, H, the whole operating as and for the purpose specified.

[This invention consists in the employment of two scythe-shaped cutters, operated in a peculiar way, and working over stationary cutters, and used in connection with a discharging device, whereby the standing stalks, as the machine is drawn along, are cut at a proper distance from the surface of the ground, gathered or thrown on a platform, collected into compact form, and after being bound by an attendant, discharged from said platform upon the ground.]

SEWING MACHINES—Abraham Bartholf, of New York City: I claim the construction of the taper portions of the shuttle, and the forked portion of the shuttle driver, which acts upon it to drive it back, in a manner substantially as described, so that the said portion of the driver bears upon the top and bottom of the shuttle with a tendency to draw it away from, or prevent it from hugging, the side of the race way.

And I also claim giving the two claws, i i′, which produce the backward motion of the shuttle, a relative form, substantially as described, by which the shuttle is prevented hugging the bottom of the race-way, as set forth.

[This invention relates only to sewing machines in which a shuttle is used. Its object is to reduce the friction of the shuttle in the race-way without the use of oil, and thereby to avoid the dirtying of the shuttle thread, which is the source of great trouble in sewing delicate or light-colored work, when oil is used in the race-way. The invention consists in a certain construction of the shuttle and driver, which tends to prevent the shuttle lugging the race-way in its retreat, which it should be observed is the part of its movement in which, under the most common construction of the shuttle and driver, it is caused to hug the race-way most closely.]

SIRUP CASTERS—Edmund Bigelow, of Springfield, Mass.: I claim the described measuring faucet or register, in combination with the revolving sirup fountain or reservoir.

TRAPS FOR ANIMALS—John L. Brabyn, of New York City: I do not claim the straight platform in any position.

But I claim a tilting platform in combination with the enclosed recess, C C, when the platform is comprised of the inclined plane and horizontal floor, A A, as described, and for the purpose specified.

GRINDING MILLS—D. E. Breinig, of Philadelphia, Pa.: I claim, first, The upper portion of the grinding surface of the shell and buhr cone-shaped, with inclined sides terminating in a horizontal or curved grinding surface, in combination with the deflecting arms, n and p, or their equivalents.

Second, The shell and buhr formed as above described, in combination with the scraper, W, sliding segment, N, and pinion, P, arranged and operating substantially as described.

APPARATUS FOR ROASTING COFFEE—Robert Brown, of Ashtabula, Ohio: I do not claim separately any of the parts described.

But I claim the vessel, A, provided with the adjustable rotating scrapers or blades, D, attached to rods, i, of varying lengths, which rods are pivoted to the shaft, C, and the whole arranged to operate as and for the purpose described.

[The object of this invention is to obtain a portable parching or roasting device for domestic use: one that can be readily operated, and not at all affected by the "buckling" of its bottom, from the action of the fire upon it.]

CHURNS—Harvey Brown, of New York City: I claim the arrangement of the trailing paddles, wheels, and gearing, operated substantially in the manner and for the purpose set forth.

METHOD OF ATTACHING EXPANSIBLE CUTTING LIPS TO AUGERS, &c.—Nicholas Clare and John Quigly, of Malden, N. Y.: We claim the detachable and adjustable reamer or plug-borer, constructed and capable of being operated as set forth.

CLASPS FOR FASTENING BAGS—W. H. Cloud, A. L. Hatfield, and C. H. Burdick, of Fremont, Ohio: We claim the peculiar construction of semi-circles, a a, with thin edge to prevent slipping, and hinge, B, at one side, clasp, c, and catch, d, on the other side, the peculiar construction of lever, f, so as to be operated upon by the pressure of the bag when fastening, and thumb piece, h, by which it is easily opened, the whole being arranged and combined in the manner and for the purposes set forth, or in any other manner substantially the same.

PEN AND PENCIL CASES—John Cockburn, of New York City: I do not claim, separately, operating the pencil tube, C, by means of the spirally slotted tube, D, for this has been previously done.

But I claim the arrangement and combination, as shown and described, of a pen slide, H, which girdles its tube, G, with a boss, b, which latter girdles its tube, B, for the purposes set forth.

[This invention consists in a peculiar arrangement of means for operating the pen and pencil, whereby the pen and pencil are pushed in and out of the case at the same end; the construction of the case is rendered extremely simple, and the usual exterior appearance can be obtained.]

METHOD OF SECURING POCKET-BOOKS, &c.—Oliver Cox, of Alexandria county, Va.: I claim the lock constructed as described, and attached to the pocket-book, &c., in combination with the button constructed as described, the whole operating as set forth, for the purpose of attaching pocket-books, porte-monnaies and purses to the pocket of the wearer, as set forth and described.

HAND CORN PLANTERS—Daniel G. Coppin, of Cincinnati, Ohio: I claim the combined arrangement of the concave plate, K, lever, h, and seed rod, f′, arranged with the pipes, d and g, and spring, J, all constructed and operated as represented, for purposes mentioned in the specification.

PORTABLE PUMP—William and Benjamin Douglas, of Middletown, Conn.: We do not claim an elastic cover, d, placed over a chamber, E, in order to form a pump, for such device has been previously used, and pumps thus constructed are generally known as bellows pumps.

Nor do we claim any of the parts separately.

But we claim the pipes, A F B, and the chamber, E, provided with the flexible cover, d, and lever, L, or their equivalents, and the cup, M, the parts being constructed and arranged relatively with each other, so as to operate as and for the purpose specified.

[By a peculiar arrangement of pipes, air vessel, and a suction and force chamber, a very portable and efficient pump is obtained, and one that is especially applicable to watering gardens, syringing plants, washing windows, and similar purposes.]

SAW GUMMER—M. Ernsberger, of Bremen, Ohio: I do not claim, separately, the burr or cutter, e, for that has been previously used for analogous purposes.

But I claim the stock, A, provided with the screws, d, or their equivalents, and also provided with the tube B, collar, C, pin, g, and shaft, D, with cutter, e, formed on it, the whole being combined and arranged substantially as and for the purpose set forth.

[Full particulars of this invention will be found on another page.]

HARDENING IRON AND STEEL—George James Farmer, of Birmingham, England. Patented in England, August 23, 1856: I wish it to be understood that I do not confine myself to these precise details, nor to the exact proportions of the several chemical compounds stated, as I have merely specified those details and proportions which I have hitherto found the best suited to effect the intended purpose, and they may probably admit of some slight variation when operating upon different qualities of metal.

I claim the hardening of articles formed of iron or steel, by plunging them into a solution of prussiate of potash, sal ammoniac and saltpeter after they have been heated red-hot and rolled in a powdered mixture of the same materials as set forth.

REFRIGERATORS—William Ferris, Philip Garrett and James Megratten, of Wilmington, Del.: We do not claim the outer and inner boxes or cases, nor their combination.

Neither do we claim filling the space between the inner and outer box with any composition or matter which may be a non-conductor of heat.

But we claim the combining the third or inner box or frame, o o o o, with the interior of a refrigerator, as shown, so that a perfect circulation of cold air may be kept up in the interior of the box or case, o o o o, and also around it, as shown and set forth.

COTTON PRESSES—William Field, of Providence, R. I.: I claim, first, The arrangement of the chains, or their equivalent, connecting the followers, so that by applying power and motion to one follower, it is transmitted to the other, and also the followers retain their parallelism to each other, however unequal the resistance at either ends.

Second, The combination of the screw for raising the follower with the chains, or their equivalent, for raising the followers when arranged as described, for the purpose set forth.

Third, The guard plate, in combination with the followers, for the purpose described.

SEEDING MACHINES—Joseph Fray, of Battle Creek, Mich.: I claim the device of using a screw with double thread, coarse and fine alternately, in the bottom of the seed hopper, in combination with the oscillating hand lever and the eccentric pivot, to force the seed through the holes in the perforated bottom of said seed hopper, by means of the compound oscillating motion of the screw.

BOX CASES AND LUBRICATORS FOR RAILROAD CAR AXLES—George W. and Jacob C. Geisendorff, of Cincinnati, Ohio: We claim the employment of the divided packing, a a′, in combination with the springs, c c, and d d, constructed substantially in the manner and for the purposes set forth.

MEANS OF PROTECTING TILLER ROPES OF VESSELS FROM FIRE—W. Y. Gill, of Henderson, Ky.: I do not claim, broadly, the protecting of articles from fire by enclosing the same within a double case, the space between its sides being filled with a non-conducting material, for this is a well-known means of protecting articles from heat, and may be seen in the various fire-proof safes, refrigerators, water coolers, &c., in common use.

But I claim enclosing the tiller ropes, G, of steam vessels by a double tubing, b d, connected with double boxes, c f, or their equivalents, to form the necessary elbows, the spaces between the tubes and boxes being filled with a proper non-conducting material, e, and the whole arranged and applied substantially as shown and described, for the purpose set forth.

[We have noticed this invention in another portion of this journal.]

PIPE TONGS—Henry H. Gilmore, of Boston, Mass.: I claim the combination of an inclined plane or planes, or the equivalent thereof, with the slotted jaw, for the purpose described.

PUDDLING FURNACES—John P. and John Grove, of Montour county, Pa., We do not claim the invention of revolving bottoms for puddling furnaces.

But we do claim, first, the employment of a revolving bottom for a puddling furnace, arranged with water tubes for cooling it, and with the peculiar air-tight joint described, the whole arranged and operating substantially as described.

Second, The employment in a puddling furnace of a revolving tool, arranged and operating in the manner and for the purpose substantially as described.

BOOT-JACK AND BURGLAR'S ALARM COMBINED—F. C. Goffin, of Newark, N. J.: I do not claim, broadly, the employment of movable jaws to clamp and hold the heel of the boot.

Nor do I claim, broadly the employment of spring door alarms, to give them a signal when attempt is made to force an entrance.

But I claim as an improved article of manufacture, a boot-jack alarm, made substantially as described, to wit: the bed, A, jaws, B, treadle, C, pendant, E, slide, F, and spring, D, arranged substantially as described, whereby the article serves the double purpose of a boot-jack and door alarm.

[We give a notice of this in another column.]

REEFING SAILS—Lewis Higgins, of Jersey City, and Alexander Brown, of New York City: We do not claim the rolling of the sail on the yard itself.

But we claim, first, The truss frame, E E, constructed and fitted with a series of rollers, a a, which embrace the yard and rolled up portion of the sail, substantially as described, to hold the yard to the mast, but to permit the rolling of the sail thereon without the necessity of dividing the sail down the center.

Second, The combination of the rings, H H, which carry the traveling leads, f, with the yard and with the truss, by means of the collared bands, d d, and the rolling stays, h h, in the manner substantially as described, to prevent longitudinal movement of the yard, and the rolling of the traveling leads with the yard.

[See another page.]

LANTERNS—A. H. Golden, of LaFayette, Ind.: I claim the bow or hail, B, pivoted to the upper part of the lantern, A, and provided with the plate or shield, C, and clamp constructed as shown, whereby the lantern may be readily secured to the arm of the person desiring its use, and the person have the control of both arms and hands, and at the same time have the full benefit of the light.

[This lantern is so attached to the arm of the person carrying it that he has perfect control of both arms and hands, and at the same time have full benefit of the light. The invention is designed more particularly for the use of railroad conductors while collecting fares and tickets, but it may be advantageously used by others in performing any work at which a light is required, and both hands have to be used.]

HORSE COLLAR BLOCKS—E. D. Gould, of Darien, N. Y.: I do not claim a collar block with a base to mold the rear or belly of the collar.

But I claim a collar block so constructed as to shape the interior of the front of the collar, and the interior of the rear of the collar next to the front, and the interior only, and stretch them at the same time, and hold them firmly in the form required, while the rear or belly of the collar is manipulated by hand, and worked and beat into the form required with a mallet, and other suitable tools, substantially as described.

RAILROAD STATION INDICATOR—John M. Harvey, of Amsterdam, N. Y., and N. J. Becker, of Florida, N. Y.: We claim, First, The arrangement of a series of separated printed indicating cards, plates, or boards on a flexible endless bolt or chain, and having the same revolve over a flat square or many-sided revolving shaft within a case which has a transparent front, substantially as set forth.

Second, The employment of a self-adjusting forked rod leading down to the railroad rails, and furnished with a catch on each prong, in combination with projections on the corners of the square, or many-sided shaft, a reversing cam, and double inclines or bevel stops, arranged along the track at the different stations or streets, substantially as and for the purposes set forth.

Third, The combination of a spring self-adjusting bell hammer and bell with the square or many-sided shaft, and its projections, substantially as and for the purposes set forth.

[An engraving and description of this invention will be found on another page.]

CONVERTING RECIPROCATING INTO ROTARY MOTION—Forest H. Harwood, of Rushville, N. Y.: I claim the arrangement, substantially as shown and described, of a revolving eccentric ring or band, B, with edge clips, a b, of a reciprocating rod, or its equivalent, for operation together, to produce a revolving motion from a reciprocating one, and the reverse, as specified.

And I further claim the combination with the reciprocating clips, a b, of the rod, D, having a radial action to the ring shaft, A, of the endless band, B, arranged eccentrically to its shaft, when said band is made of diminishing thickness in opposite directions from its dead points or portions for operation with the clips, in the manner and for the purposes set forth.

And lastly, I claim connecting the revolving eccentric ring or band, B, that reciprocates the clips, a b, or is revolved by them, with its shaft by or through the fly wheel, which aids the ring in passing its dead points or centers, whereby the fly wheel is braced by the ring, and more immediate relief is given to, and generally diffused over the latter.

[See a description in another portion of this paper.]

POTATO DIGGERS—Lewis W. Harris, of Waterville, N. Y.: I claim the employment or use of a share, E, and drag, G, so constructed and arranged to operate as and for the purposes shown and described.

I further claim, in combination with the share, E, and drag, G, the supplementary shares, F F, arranged to operate conjointly with the drag and opening share, as and for the purpose specified.

[A drag is employed in connection with a share, so arranged that the hills or drills containing the potatoes or other roots, will be opened by the share, and the roots subjected to the action of the drag, whereby the earth will be leveled and the potatoes brought to the surface of the ground. The invention also consists in the use of supplementary shares, in connection with the drag, and opening share above-mentioned, whereby the sides of the hills or drills are removed or pared off, preparatory to the action of the central opening share and drag, and the operation of the last-named parts is in some degree facilitated.]

ROW LOCK—James H. Hills, of Burlington, Vt.: I claim the arrangement and combination of half rings, H, and set or adjusting screws, F and J, and the sus pension and operating of the oar at point e, substantially in the mode and manner described.

COUPLING PIPES—W. Hudgin, of Washington, D. C.: I claim effecting the combination of the main and branch pipes, A B, by means of an open coupling, B′, which is furnished with an enlarged passage, a, to receive the main pipe, A, a passage to receive or communicate with the branch pipe, B, and a set screw, c, or wedge and key, and suitable packing to make a tight joint, and always maintain the same, substantially as and for the purposes set forth.

[We have given a notice of this machine in another column.]

METHOD OF HOLDING AND FEEDING THE BOLT IN STAVE MACHINES—Abraham Hupp, of Lancaster, Ohio: I claim the combined arrangement of the levers, 14 and 15, catch rod, 21, and slides, 5 5, arranged with levers, n n, and m, pawl, 12, ratchet wheel, 8, cord, 7 7, and plate, 6 6, all for holding and feeding the timber, R, to the cutter as represented, and for the purpose mentioned in the specification.

MACHINE FOR CUTTING FILES—J. N. Jacobs, of Worcester, Mass.: I claim, first, the wedge, I, at the top of the toggle by which the cutter is operated, combined with a foot piece, r, with its shoe, r′, resting upon the file blank or file, by means of mechanism substantially such as described, and with a loaded lever, O, or its equivalent to operate as set forth, for the purpose of controlling the depth of cut throughout the whole length of the file.

Second, Supporting the file blank or file upon a rolling bed fitted to a carriage with rollers interposed in the manner substantially as set forth, for the purpose of insuring an uniform depth of cut all across the file.

Third, The combination of the rocking shoe, r′, of the foot piece, r, with the rolling bed, E, substantially as and for the purpose set forth.

Fourth, The cam, W, combined with the wedge, I, foot piece, r, and shoe, r′, by mechanism substantially as herein described, for the purpose of raising the cutter and shoe, r′, of the foot piece, r, from the file or blank to prevent injury during its return.

[A notice of this invention will be found on another page.]

ICE PITCHER—Ernest Kauffman, of Philadelphia, Pa.: I claim the ice pitcher having the inner portion or lining, B, fitted to the outer portion or casing, A, with screw threads or their equivalents, which make a tight joint, but provide for its ready removal and replacement or renewal, as set forth.

[An engraving and description of this invention will be found on another page.]

CRIMPING TOBACCO—Rhodolphus Kinsley, of Springfield, Mass.: I claim the employment of one or more pairs of rollers constructed and arranged substantially as above set forth, for equalizing and crimping rolls in the manufacture of lump tobacco.

PIANOFORTE ACTION—Henry A. Leaman, of New York City: I claim, first, the attachment of the hammer of an upright pianoforte action to the rear extremity of the key, and the arrangement of the notch, d, in the back side of the butt, B, of such hammer, so that the working face of the notch will operate substantially as described, in contact with the edge of a stationary bar, f, and by such operation cause the hammer to move back to strike the string, when the front end of the key is depressed.

Second, In combination with the attachment of the hammer to the rear extremity of the key, I claim the attachment of the damper to the hammer butt below the pivot, b, which attaches the hammer to the key substantially as herein specified, whereby it is made to serve as a stop to the hammer or means of regulating the length of stroke of the hammer, and depth or level of the key, substantially as described.

Third, I claim the application of the regulating screw, c, in the rear end of the key to operate in combination with a portion, B′, of the hammer butt extended below the pivot, which attaches the butt to the key, substantially as described.

Fourth, I claim the arrangement of the damper lever, C, behind the downwardly extended portion, B′, of the hammer butt, substantially as and for the purpose specified.

[This improvement consists mainly in a certain arrangement of the several parts of the action for upright pianofortes, by which any one of the keys can be taken out, with all the moving parts of the action that belong to that key, without disturbing any other part of the action.]

ATMOSPHERIC PRESSURE DENTAL PLATES—Morris Levett, of New York City: I do not claim retaining the plates of artificial teeth in place by means of atmospheric pressure, as the same has been applied both to the roof of the mouth, and also at the alveolar ridge.

But I claim the manner herein described of attaching the plates of artificial teeth by means of separate cells or cavities acting upon the alveolar ridge substantially in the manner and for the purposes specified.

SEEDING MACHINES—Isaac B. Lutz, of La Fayette, Ind.: I do not claim the adjustable bars, D, separately, nor do I claim broadly the employment of screw rods for discharging the seed from the seed boxes.

But I claim the rotating rods, K, provided with two screw threads placed in reverse positions, and so arranged as to discharge the seed at both ends of their seed boxes, G, substantially as and for the purpose set forth.

I further claim the seed boxes, G G H, attached respectively to the adjustable bars, D, and beam, A, and provided with seed distributing screw rods, operated from the driving wheel, B, through the medium of the gearing m n q j j j, substantially as set forth.

[This invention is chiefly designed for sowing seed broadcast among standing corn, and consists in the means employed for distributing the seed, and in a peculiar arrangement of the seed boxes and shares, so that they are rendered capable of adjustment, to enable the implement to be expanded or contracted while in motion, to conform to the varying widths of the rows of seed.]

SMUT MACHINES—Samuel B. Manning, of Alleghany, Pa.: I claim the use of a cone, l, placed above the distributing cup, to prevent any eddy or interruption of the draft of air, which would cause the deposit of the screenings and dirt in the cup.

VISE ANVIL FOR REPAIRING T-RAILS—Sanford Maford Mason and E. M. Davis, of Michigan City, Ind.: We claim, first, the combination of the guard, c, on the lever jaw, and the groove, a, in the bed piece with a raising mechanism for raising up said lever jaw, substantially as described.

We also claim in combination the projection, d, on the lever jaw and the groove, g, on the locking jaw, so that when the jaws are raised up, they will open to receive the rail, and when released will catch and firmly hold themselves and the rails to the bed piece, substantially as described.

CORN SHELLERS—Thomas W. McFarlan, of Salem, Ohio, and L. H. Davis, of West Chester, Pa.: I claim the gutter-shaped guard, I, arranged between and underneath the bevel picker wheels, and over-lapping the head of the vibrating riddle, substantially as and for the purposes set forth.

Second, Having the head end of the riddle rest upon a horizontal projection of an inclined board, substantially as and for the purpose set forth.

Third, Lining the spouts or shutes of the head, E, with a thin pivoted or yielding metal lining in the manner and for the purpose set forth.

FENCE POST—R. Merrill, of Elmira, N. Y.: I claim the shoe or foot plate, H, constructed as described with deflected plates, l, and slotted openings, g, in combination with the skeleton post, a, and flanges, e, substantially as and for the purpose set forth.

HARVESTERS—W. K. Miller, of Canton, Ohio: I do not claim to have invented the separate features of balancing the cutter bar and its appendages upon a supporting shoe or roller, nor of hinging the same to the central axis around which the tongue or hounds of the machine turn, nor of arranging the central line of draft so as to more nearly equalize the resistance in drawing on both sides thereof, as I am aware that such in different connections are not new.

But I claim the combination of the draw bar, F F, and cutter bar, P, when the same are balanced upon the sustaining shoe, R, and hinged to the axle of the driving wheel, A, distinct from the hounds of the draft tongue as described with the tongue, H, so attached that the line of its draft will be equi-distant from the central longitudinal lines of the driving wheel, A, and sustaining shoe, R, the several parts being constructed and arranged with respect to each other as set forth for the purpose specified.

THRESHING MACHINES—John R. Moffitt, of St. Louis, Mo.: I claim the construction and arrangement of the metallic gearing frame, H, provided with arms, h h, and attached to the machine substantially as explained.

COATED METAL PLATES—Edmund Morewood and Geo. Rogers, of Enfield, Eng. Patented in England July 21, 1855: We claim the new article of manufacture herein described, termed coated metal plates, consisting of sheet metal prepared and coated with a mixture of repellant and preservative coating substantially as herein set forth, the said coated sheet metal being intended as a substitute for many purposes for tin plates, galvanized iron, or other articles of that description produced by dipping sheets of metal into melted metals.

MACHINE FOR SPLITTING WOOD—Franz Noette, of Brooklyn, N. Y.: I claim the intermittingly rotating table or bed, D, in combination with the vertical reciprocating cutter shaft, F, arranged to operate substantially as and for the purpose set forth.

[A notice of this invention will be found on another page.]

REMOVABLE RAMMER OF REVOLVING FIRE ARMS—Henry S. North, of Middletown, Conn.: I claim having the rack, d, and passage or chamber, b, made in the head of the base pin, B, substantially as described, thus rendering the rammer independent of every other part, and facilitating its removal and construction as set forth.

[A description will be found on another page.]

MACHINES FOR PLANTING POTATOES—Jesse W. Pelletreau, of East Moriches, N. Y.: I claim the general arrangement of the hopper, K, and automatic dropping apparatus, consisting of the spouts, l, clappers, m, wheel n, and blocks, 9 9, in connection with the opening and covering plows, substantially as specified, whereby the potatoes or pieces of potato being fed into the machine by hand are not injured, and all the advantages of hand planting are attained without the laborious work connected therewith as specified.

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CROSS-CUT SAWING MACHINE—Henry H. Potter, of Carthage, N. Y. : I do not claim separately any of the parts herein described.

But I claim operating the saw, E, by means of the bent lever, C arranged substantially as shown, in connection with the feeding device formed of the levers, F G, and guide, f, the whole being combined and arranged to operate conjointly, for the purpose set forth.

[A notice of this will be found on another page.]

SEEDING MACHINES—Thomas A. Risher, of Circleville, Ohio : I do not claim the combination of the bar and plates with the double-holed bottom and the reciprocating slides, as this I have patented.

But I claim the peculiar arrangement of the bars, B B1 B2 B3, with the right and left screws, E E', slides, a1 and a2, with its stirrer, O, for the purpose of regulating the quantity of grain with uneven slides, as described.

SEEDING MACHINES—Thomas A. Risher. of Circleville, Ohio : I claim the peculiar arrangement of the bottom, B, as constructed, with the rock slides, c c c c, handles d d and e e, rods, h h, set screw, a, and bottom, x, all operated in the manner set forth and for the purpose described.

FIELD FENCE—Benning Rowells, of Ossian, N. Y. : I claim the method of connecting the panels and the braces with each other, by interlocking the upper and lower rails with the brace post, in the manner as described, whereby the panels are firmly connected with each other, and interlock with the posts without the aid of independent connecting devices.

COTTON SEED PLANTERS—James Ross, of Midway, Ala. : I claim the combination of the hollow shaft and arms, flanges, l l, shaft, c, discharge plate, a, and mechanism vibrating the same, arranged and operating substantially as and for the purpose set forth.

WALLET FASTENER—Jacob T. Sargent, of Carlinville, Ill. : I claim the combination of the spring catch, and the attachment plate, the same constituting a safety apparatus for the purpose described.

I also claim arranging the spring catch and attachment plate together as specified, and making the said catch with a bend or recess, d, disposed with respect to the attachment plate in manner and for the purpose set forth.

SEWING MACHINES—Elliot Savage, of Berlin, Conn. I claim forming a chain stitch seam by the looper, constructed and arranged in the manner described, when operated in combination with an eye-pointed needle, so that the looper shall enter the open loop as the needle rises, and, while resting on the bed plate, securely hold the first loop open in the path of the needle and release the loop, when the needle shall have entered to form a new stitch as set forth.

I also claim the specific device herein described for regulating the tension of the thread in sewing machines, consisting in a spool-supporting bracket constructed as specified, and arranged in relation to and operating in connection with a screw-threaded standard in such a manner as to ascend or descend when rotated around and upon said standard for the purpose of causing the thread to be wound around said screw until the requisite degree of tension is obtained.

GRAIN SEPARATORS—Francis Schunko, of York, Pa. : I do not claim separately any of the parts shown and described for said parts or their equivalents have been previously used, but I am not aware that the parts have been arranged as herein shown, so that the screens could be inclined more or less as desired, the screens subjected to a jarring shake motion, and the grain subjected to the action of the blast during the principal part of the time occupied in its passage through the machine.

I claim the screens, E I J, placed in adjustable frames, F H, operated by the cam, I', levers, J' K', and springs, q t, arranged relatively with each other, and the fan, C, spout or passage, P, and board, G', substantially as shown and described for the purpose set forth.

[A series of seives or screens are employed and a blast fan arranged relatively with each other, whereby the grain is not only seived or screened in a perfect manner, but in its passage from one seive or screen to the other, presented in the most favorable manner to the action of the blast from the fan, so that all light substances will be blown away. In order to render the operation of the seives and fan as perfect as possible, provision is made for the adjustment of the latter, whereby the passage of the grain through the machine may be accelerated or retarded as occasion may require.]

PLOWS—T. S. Scoville, of Elmira, N. Y. : I do not claim making the eyes of the spur wheels larger than the journals on which they turn.

Nor do I claim the simple use of washers or of clearing teeth.

But I claim the combined arrangement of the loosely turning spur wheels, D D, the separating washers, f f, and the clearing teeth, i i, acting upon or close to said washers, substantially as specified, so that the eccentric movement of the said spur wheels, together with the said closely fitting washers and clearing teeth, will effectually keep the implement free from impediment.

LOCK—E. M. Shaw, of Baltimore, Md. : I claim the plate, r, spring plates, p p, pins, x, and hollow stem, q, combined as described.

RAILROAD STATION INDICATOR—Charles J. Smith, of North Prairie, Wis. : I claim neither the cylinders nor the scroll, but I claim the shifting lever or bar, B, and the mode of adjusting it by means of the index finger at the end of the crank shaft, F, in such manner as to cause the rollers or cylinders to revolve in opposite directions by means of the same application of power in combination with the pin or stops upon the lever, A, and the slots or openings in the aforesaid shifting lever or bar, B, arranged specifically as shown and described, for the purposes set forth.

HAND PRINTING STAMP—Benjamin B. Stanton, of New York City : I am aware that hand stamps for printing have long been made with a movable die for the purpose of first being brought in contact with the inking pad, and then with the printing pad. I do not claim such movable die.

But I do claim moving the die from the inking pad to the printing pad and backwards by means of the spool, A A, through which the stamping rod passes, operating in a straight line between parallel guides, arranged for that purpose upon a stationary arm over the inking and printing pads.

I also claim in combination with the sliding spool, A A, the catch, F, when arranged and operated in the manner and for the purpose specified.

CARPET-HOLDER—Horace Thayer, of Warsaw, N. Y.: I do not claim as new the parts composing my device.

But I claim the arrangement of the spring tube clasp and slide forming a carpet holder, constructed and operated substantially as described.

IRONING TABLE—Wm. Vandenburg, Jr., of New York City : I claim the ironing table composed of a board rigidly attached at one end to a stand, which is provided with a movable support for the other end of the board, to operate in the manner and for the purpose specified.

[We will publish an engraving and a full description of this table in a week or two.]

HARVESTERS—Isaac Van Doren, of Somerville, N. J. : I do not claim elevating the sickle by means of a plate or part, swinging on a center, and moving in a circle, and carrying the sickle with it, this having been done by W. A. Kerby in his invention, patented 1856.

But I claim the arrangement and connection of the movable part, E, with the fixed part, B, by means of the two connecting curves, 3 and 4, or their equivalent, to secure proper motion to the part, E, without any necessary support or connection from the center, G.

I also claim, in combination with the parts, B and E, the secondary movable part, K, substantially as described to bring the sickle, whatever its position on the curve, B, level with the cutting surface.

I also claim, in combination with the parts, B E and K, the use and application of the universal joint, C, in connecting the sickle lever to the machine, substantially as described, to allow of the change in the position of the sickle, in the manner described.

LAMP ATTACHMENT—William W. Wade, of Long Meadow, Mass., and Charles Burnham, of Springfield, Mass. : We are aware that deflectors or chimney bands have been used, also that chimney bands have been attached to the top of the shell by hinges projecting outward, and also that openings have been used as fasteners for various other and different purposes than described; such we do not claim.

But we claim securing the deflector, G, into the groove, of the chimney band, J, the said band being hinged to the lamp cap, the whole constructed and operating in the manner set forth.

PLOWS—J. C. Williamson, of Washington, Ga. : I claim the combination of the plow iron, E, brace, F, and cutter or share, G, when formed and united together, and to the beam, in the manner and for the purpose set forth.

COUPLING OF SHAFTING FOR PROPELLERS—Seth Wilmarth, of Charleston, Mass. ; S. L. Hay, of Reading, Pa., and D. N. B. Coffin, Jr., of Newton, Mass. : We claim the combination of plate, d, or its equivalent, with the head plates of the shaft in any manner substantially as described, so that the coupling may accommodate itself to the angular and transverse variation between the driving and driven parts of the shaft, whether that variation be variable or permanent.

PISTONS FOR STEAM ENGINES—Ross Winans, of Baltimore, Md. : I claim the combination substantially as set forth, of self-setting packing, that, unaided by the skill of the engineer, will adjust itself in to close contact with the cylinder, and bear against the same with the proper force; of means for binding this packing firmly in place when it has set itself out, and for slackening it again when necessary to allow it to rest itself; and of means by which the packing can be easily loosened and tightened without removing the cylinder head, whereby the packing of the piston of a locomotive can be adjusted better, and in less time than by any combination previously invented.

LOCOMOTIVE ENGINES—Ross Winans, of Baltimore, Md. : I claim the combination of a foot-board, located below the usual level of the platform of the tender, and the surface of the grate, with a fire-box and grate adapted to the burning of coal as fuel, whereby the interior of such a fire-box and the grate thereof, can be more readily reached by the fireman, and his duties be performed with greater expedition, convenience and effect.

I also claim the combination of an ash-pan, open at its hinder end, with a foot-board located below the grate and the usual level of the platform of the tender, whereby the lower side of the grate and the space beneath can be inspected and reached by the fireman while the engine is in motion.

GRATES FOR STEAM ENGINES—Ross Winans, of Baltimore, Md. : I claim the grate of a locomotive engine, composed of a series of narrow sections each containing two or more bars and supports therefor, the sections and their supports being constructed and arranged substantially as set forth, to permit each section to be rocked independently of the other by means of a hand lever applied outside of the fire-box, as set forth.

I also claim the construction of the series of bars of the grate and the bearer for supporting the same as described, so that any member of the series may be rocked upon two axes, without contracting the narrowest part of the spaces between it and the adjacent stationary members of the series, as described.

DOOR BOLTS—John Woolman, of Philadelphia, Pa. : I claim the arrangement of the flat or elliptical bolt, A, contained and moving within suitable straps or casings, with an eccentric motion, when operated and moved by means of the handle or lever, B, substantially as described.

MACHINERY FOR BOLTING, DUSTING AND SEPARATING THE GROUND MATERIAL—Joel Woodward, of Philadelphia, Pa. : I claim, first, The stationary brush or distributor shown by letter, a, for the purpose as set forth.

Second, The brushes, E E E, so arranged as to carry the meal or bran to or from the center, whereby the substance can be scoured or brushed as much as desired, in the manner and for the purposes set forth.

Third, The manner of making any number of separations or any mode of combining more than two separations in the duster or separator, in the manner and for the purpose set forth.

Fourth, The manner of providing the corresponding bottom or platform below E E, with sweeps or scrapers to carry the flour to spouts, as set forth.

Fifth, And the mode of regulating the brushes on the wire or cloth by the bolts or set screws, and the screw, b, at the bottom of the shaft, I, in the manner and for the purpose substantially as described, and to be used in connection with the specification.

METHOD OF GUIDING RECIPROCATING SCROLL SAWS—John C. Cline (assignor to himself and Samuel Rhodes) of Philadelphia, Pa. : I claim the employment of a cap, 3, in combination with a tubular guide, z, in the manner and for the purpose substantially as set forth.

CUTTING DEVICE FOR REAPING AND MOWING MACHINES—Thomas Harding (assignor to Warden, Brokaw & Child), of Springfield, Ohio : I claim the arrangement of the end of the sickle bar, A, next the divider, of a cutting and clearing section b, as constructed and for the purposes set forth.

STRAW CUTTER—J. B. Okey, of Indianapolis, Ind., assignor to himself and W. Y. Wiley, of Marion county, Ind. : I claim the combination and arrangement of the box, a, gage, G, knives, F F, or their equivalents, upon the drum or wheel, B, when constructed and arranged substantially as set forth.

LAMPS—Pascal Plant (assignor to himself and Peter Hannay), of Washington, D. C.: I claim forcing a current of air through the lower or blue part of the flame by means of a cap-piece, constructed and arranged in relation to the wick tube, in the manner and for the purposes substantially as set forth.

LANTERNS—J. H. Reighard (assignor to himself, John Bird, and David Challener), of Birmingham, Pa. : I do not claim the coating of the external surface of a portion of the glass globe of lanterns with silver or other metallic substances, for the purpose of giving a reflecting surface.

But I claim making a circular convex projection in the side of the globe of lantern cast or molded in one piece with the globe (which is to be silvered externally as a reflector), the edge of which circular projection is slightly raised from the surrounding surface of the globe, so as to permit of the convenient attachment of a cap or covering to protect the silvered surface of the reflector from injury.

LAMPS—Robert Steinmann (assignor to himself and N. S. Wax), of Boston, Mass. : I claim, first, The arrangement of the elevated reservoir, I, with its filter, K, and passages of communication, G and H, operating in the manner substantially as set forth.

Second, In combination with the reservoir, I, the passages, G and H, and the oil chamber, D, I claim the bent tube, n, operating in the manner substantially as described.

Third, And in combination with the elevated hot oil reservoir, I, I claim the plate, L, for the purpose of regulating the temperature of the fat or oil, as specified.

GRAIN SEPARATORS—Josiah Turner, of Sunapee, N. H., assignor to himself and Edmund Burke, of Newport, N. H. : I do not claim the toothed cylinder, A, or its accompanying toothed concave, nor do I claim any of the described devices separately.

But I claim the upward inclined revolving straw carrier, S, in combination with the vibratory lattice, S'', and the adjustable lattice, S', constructed and operating substantially in the manner as set forth and described.

PORTABLE GAS RETORTS—D. L. Weatherhead and J. T. Henry (assignors to themselves, John M. Smith and Wm. P. Campbell), of Philadelphia, Pa. : We claim the exterior horizontal cylinder, B, in combination with the interior horizontal perforated cylinder, C, charged with pumice stone, when the cylinders are so constructed and arranged that the material from which the gas is to be made shall flow into the annular space between the two cylinders, and the gas when generated shall pass through the body of porous material for the purpose of purification in the manner described.

RE-ISSUE.

SAWING MILL—Wm. H. Ferry, Jr., of Ferrysburg, Mich. Patented July 21, 1857 : I claim, first, The particular means and their arrangement, as described, for accompanying that end.

Second, Effecting by means of an eccentric, the combination of the log carriage and automatic reversing mechanism, thereby rendering the saw mill capable of self-feeding and self-gigging, as set forth.

Third, So adjusting the gaging incline, d 3, that its hinge or pivoted joint and its opposite end or terminus shall always be at the same and equal distances from the set shaft, F, as described.

Fourth, The application in the manner described of the adjustable self-fastening trip, z, to a saw-mill which operates with a continuous rapid motion back and forth, in combination with the vibratory reversing stop, w 2, substantially as and for the purposes set forth.

[We will publish a full description and engraving of this machine next week.

ADDITIONAL IMPROVEMENT.

HAND PRINTING PRESS—Samuel J. Smith, of New York City. Patented Nov 3, 1857—additional improvement dated April 6, 1858 : I do not claim an adjustable pressure block in itself.

What I claim as an improvement on my aforesaid patent of Nov. 3, 1857, is—

First, The fountain cup, o, combined with the inking table, g, in substantially the manner and for the purposes specified.

Second, I claim the joint, 16, formed by the half pieces attached to the pressure block, b, and bed, a, when connected by the horizontal screw, and used for adjusting the press block, b, to the printing surface, and securely retaining the same in place, substantially as and for the purposes specified.

EXTENSION.

TRUSS FRAMES OF BRIDGES—Thomas W. Pratt, of Norwich, Conn., and Caleb Pratt, of Boston, Mass. Letters Patent No. 3,523, dated April 4, 1844—extension dated April 4, 1858 : We claim the described method of constructing a truss, that is to say, the combination of two diagonal tension braces and straining blocks in each panel of the truss frame of a bridge, by means of which the camber may be regulated so as to increase or diminish it, either in whole or in sectional part of the bridge, the whole being constructed and operating substantially as set forth.

DESIGN.

COOKING STOVES—G. W. Pittock, G. G. Richmond, and C. Phelps (assignor to themselves and J. Lown), of Troy, N. Y.

Performances of Steam Engines.

MESSRS. EDITORS—In the SCIENTIFIC AMERICAN of March 6, page 208, Messrs. Hamblin & Heath asked for information regarding what "a low pressure condensing steam engine can do, or had done in grinding grain, with the amount of fuel consumed," a very pertinent and important question.

The late John Farey, Esq., used to say that a bushel of wheat had never been ground with less fuel than was consumed by Bolton & Watt's steam engines seventy years ago. "A bushel of wheat ground in one hour with eight pounds of coal is one horse power." The horse power may also be represented by grinding one pound of wheat, or raising 33,000 pounds one foot, or evaporating 1·158 pounds of water, or burning ·1343 of a pound of coal in one minute. On pages 515-16 of Mr. Farey's work on the steam engine, it is stated that 8⅛ pounds of coal sufficed to grind a bushel of wheat, and dress some flour, and that 8·06 pounds of coal evaporated 69·477 pounds of water or 8·62 times its own weight—time, one hour. The steam engine did not work with expansion, therefore allowance must be made for this. The whole mechanical power contained in one pound of water is represented by its pressure and expansion. In the case in question, the pressure was 12·572 pounds per square inch, or 29·05 pounds on a base of water one foot high and weighing one pound; and its expansion from water to steam of that elasticity, 1,955 times, the product of which is 56,778 pounds, from which, by deducting one-twelfth for back pressure, we have 52,047 pounds or 1·577 horse power (52047÷33,000). Thus then, of the whole laboring force, only two-thirds of it was effective. Anything which can beat that, without expansion, is a clear gain. The power is in the steam, not in the engine, therefore when a pound of water evaporated into steam does not come up to the standard above, the engine or transmitter of power is at fault. One pound of water evaporated under a pressure of 90 pounds per square inch, or 208 pounds on a water base of one foot high to the pound, expands 321 times, and its mechanical power is equal to lifting 66,776 pounds one foot high, but from this we must deduct the back pressure of the atmosphere and the obstruction from the exhaust port and pipe, which if we call one-fourth, we have a total working power of about 1¾ horse power as the utmost attainable.

Yours respectfully,

THOMAS PROSSER.

New York, April, 1858.

The following is another letter on the same subject :—

MESSRS. EDITORS—I have a "Corliss engine," four feet stroke, fourteen inches cylinder, and have kept a correct account of fuel for the last year ending Dec 31, which I consider the only correct way to get at the cost. Have run 292 days of ten hours each; used thirty-eight horse power per day, without allowing anything for shafting and small machinery, which would add three horse power certain per day—the cost of fuel per day is just $5 77. That is a trifle over 15 cents per horse power per day. The work done was cutting and grinding dyewoods, and grinding corn with an "Old's mill." I have calculated the power of an "Old's mill" at about three-quarters the power required to do the same work on the old-fashioned grist mill. The engine has run thirty-three months, and three dollars will pay all the expense of repairs, and that has been in broken bolts, done through the carelessness of the engineer. The two boilers used are the common cylinder kind, thirty feet long, thirty inches in diameter, and I am satisfied they are the cheapest boilers in use when properly made, and as for safety no one can dispute that point. I will state that the steam carried is from sixty to eighty pounds per square inch pressure by Ashcroft's steam gage. WM. B. RIDEN.

Providence, R. I., April, 1858.

The Eyes and Spectacles.

MESSRS. EDITORS—On page 235, this volume, SCIENTIFIC AMERICAN, I observe that one of your correspondents has discovered that he is "longer-sighted with his left eye, and short-sighted with his right eye, and asks if this is a common occurence?" I would say it is *not* a common occurrence, although I have met with some twenty or thirty instances of it. In the winter of 1831, a lady between forty and fifty years of age, came to my jewelry store in Burlington, Vt., where, after some hours' trial, I succeeded in suiting her eyes, by fitting a convex glass of twelve inches focal distance from one eye, and a concave glass, No. 12, from the other eye, when the lady declared she could see with both eyes alike. A gentleman in this city now wears his spectacles with a convex glass of some twelve to fifteen inches focal distance for one eye, but uses no glass for the other eye. These were all caused by nature, not by accident. To determine whether the eyes are "mates," take a pair of convex spectacles—if long-sighted—and look upon fine print, and observe whether each takes in the same number of lines, and if the same appear to be straight. If short-sighted, take a pair of concave glasses, and look at a brick wall across the street, and observe as above. The difference between the two eyes, if any, will at once be noticed. R. FITZGERALD.

New Haven, Ct., April, 1858.

Feeding Horses.

MESSRS. EDITORS—In a recent number of the SCIENTIFIC AMERICAN, I noticed a brief article on the above subject, and as you well remarked "it is an important one." As facts are wanted on all such matters, I submit the following :—

The towing of boats on the Erie canal is done in part by horses that are taken along with the boats, and partly by towing companies who keep their horses at stations about twelve miles apart along the whole length of the canal. There are three of these towing companies, and they employ about 1400 horses. They have found, after great experience, that the most economical and best feed for their horses is a mixture composed of equal parts, by measure, of corn meal and mill feed (bran or shorts weighing about twenty pounds to the bushel), mixed up wet with cut hay, and they accordingly feed this altogether.

R. W.

Buffalo, April, 1858.

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New Inventions.

American Inventions in Austria.

A morning cotemporary very properly remarks that so far as the particular attention of European nations to the progress of the American people in arts, sciences, and manufactures is concerned, we must certainly place Austria amongst the first. The Austrian railways are the only ones in Europe where the American form of railroad carriages is exclusively employed. Our general system of construction and arrangement of the parts of locomotives is extensively adopted in that country. The first river steamboat for the Old World on American principles was constructed for the Danube, and since that time two immense boats of fifty feet beam and eighty-two feet outside of paddle wheels, have been built for that river on the American model, and with engines furnished from New York. Morse's electric telegraph has from the very start monopolised the Austrian telegraph wires, and there is scarcely a large farm in that extensive empire, or a large manufactory that cannot show some evidence of American ingenuity. An American balance dock of the largest description is now being constructed at Vienna. The timber for that dock is furnished entirely from this country, and all the mills on the North river which have been standing still for months are now busily employed in the sawing and shipping of that timber. The main portion of the machinery for that dock is also being constructed in New York. There seems to be hardly an American invention of the higher class that has not found its way into Austria, and it is a matter of surprise and gratification to the American traveler visiting Austria, that the home talent is so much appreciated in a country which has been almost a stranger to us, and of which, as a general thing, we have so imperfect a knowledge.

This increased general introduction of the works of American genius and skill into Austria of late years is in a great measure attributable to the persevering efforts of Chas. F. Loosey, who, before assuming the office which he now holds of Austrian Consul in this city, was actively engaged in his profession of civil engineer in Vienna.

Improved Spoke Machine.

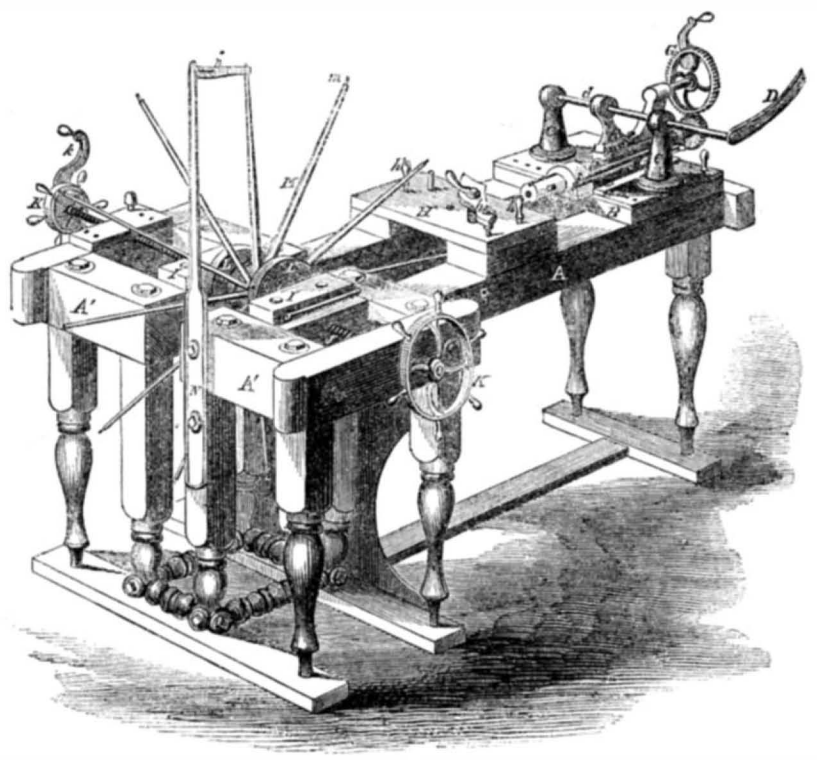
This machine combines within itself all the parts requisite for the putting together and fitting into their proper places, true and exact, all the different portions of a carriage wheel, and the operation is very simple. It is intended to be worked by hand, although it can be operated by power if necessary, or should there be power already in the shop where it is fixed. Our engraving is a perspective view, and from our description of the operation, the machine will be thoroughly understood.

A is a frame combined with the two frames, A′. Each of the frames, A′, has a block, I, that can slide along it, and carry face plates, L, through these blocks and face plates pass screws, J, which are operated by the hand wheels K, or by the crank, *k*, which is on one of them. Between these face plates, L, with the screws passing into the center of the hub, the hub is placed and screwed up firm and secure.

On the frame, A, is a block, B, which can be moved to any position on the frame and held there by a bolt and nut, from a plate on this block rise two pillars, C, that serve as journals for the axle, *d*, to which is attached a long lever, D, and this axle also carries a small segment, E; a tool-holder, F, is free to be rotated through the journal, *f*, by the handle and gear, G, or to be moved back and forth only by the motion of the lever, D. The first operation is, of course, boring and mortising the hubs, which is performed by putting an auger into F, and letting the lever, D, by its own weight, give it the necessary feed; the handle, G, is then rotated, and a hole is bored in the hub. The distance which the holes are to be apart is regulated, so that each is an equal distance apart, by a stop on one of the face plates, L.

The boring being complete, the auger is removed, and a mortising chisel put in its place. F is prevented from rotating, but allowed to slide, and the mortising motion is given to the tool by means of the lever, D, and segment, E, and the hub is fed to the chisel by the large wheel, K, which pushes the hub, face plates, and blocks, I, along, or draws them back when the nut of the other screw is removed. Both the screws, J, being now put in gear, the hub is placed in its proper position, and the spokes taken and driven in; they are adjusted, and have the necessary *dish* given them by means of the guide, *n*, which is supported by the bar, N,

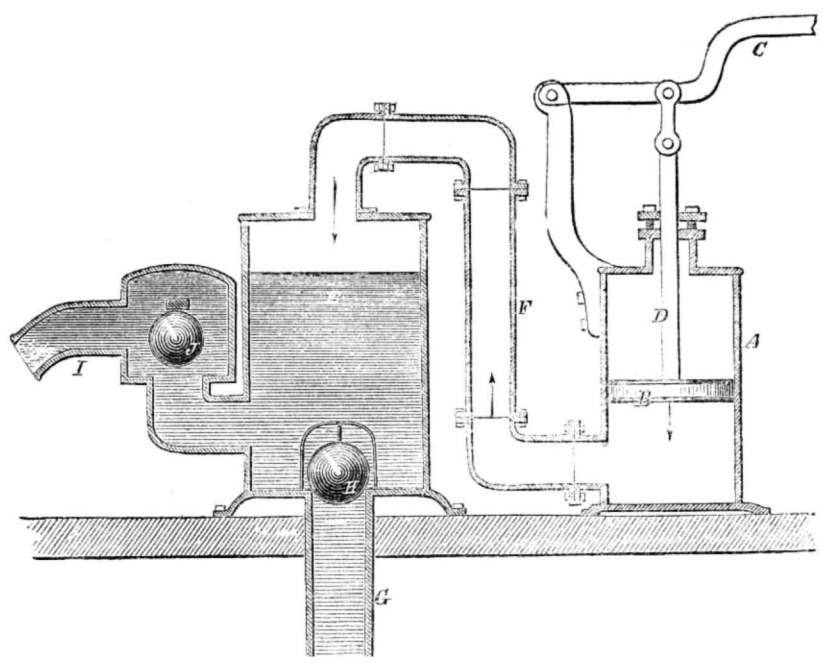
GUARD'S CARRIAGE WHEEL MACHINE.



from the frame. We should also state that the bevel of the mortise is adjusted by moving the plate from which C rise on B until the right angle is obtained, and then fastening it by a peg. The spokes, M, being now all driven home, a hollow auger is fitted into F, and a clutch or support for the spoke placed on A, and by rotating the handle, G, the tenon, *m*, is cut on the end of the spoke; when these are all cut, the wheel is removed, and the piece, H, is placed on the frame, E. This piece, H, admits of the felly being correctly bored, by means of the clutch, *h*, and the handles, *h′*, it is held quite secure and firm during the boring. The hub can be bored for the axle box, by fitting a small tool on to the screw, J, and passing it inside, and rotating it by means of the handle, *k*. We have seen the hubs bored and mortised, the spokes driven in and tenoned, and the fellies bored, of three sets of wheels, or six large wheels and six small ones, in between six and seven hours by one man in one of these machines. An extra piece can be supplied so that they will be applicable for any kind of mortising, and with little trouble one of them can be transformed into a lathe. We believe that it is one of the most useful machines for carriage builders and wheelwrights ever yet produced.

It is the invention of C. H. Guard, of Burlington, Vt., and was patented by him Oct. 20, 1857. Any further particulars can be obtained by addressing him as above, or S. C. Hills, No. 12 Platt street, New York. A machine can be seen in operation at Messrs. Brewster & Co.'s extensive carriage manufactory, Nos. 372 and 374 Broome street, this city.

SHELDON'S IMPROVED PUMP.



When any corrosive liquid, or one which has a tendency to oxydize, to abrade, or eat away, the surface of metal (or, in fact, any substance of which pumps are usually constructed) has to be raised, the operation is always difficult and expensive, because the valve seats of the pump and the piston packing get quickly damaged, and the pump rendered useless. The pump we are about to describe is one for the purpose of raising such liquids, and is so arranged that the liquid never comes in contact with the pistons, but there is a supplemental chamber in which it is received, and which is provided with ball and socket valves. This supplemental chamber and valves may be made of any material which is non-corrosive.

Our engraving is a vertical section of one of these pumps, and its arrangement will be thoroughly understood by the following description.

A is the cylinder, and B is the piston, connected by the piston rod, D, to the lever or handle, C. E is the supplemental chamber, being in communication with the cylinder by the pipe, F. G is the induction pipe, with its valve, H, and I is the eduction pipe, with its valve, J.

The operation of this pump is very simple; but before describing it we would mention the fact that the supplemental chamber can be placed at any distance from, and in any relative position with, the cylinder. Suppose that the handle, C, be raised, the piston being also elevated, a partial vacuum is created in the cylinder, and in the supplemental chamber, and the fluid rushes in by atmospheric pressure, through the induction pipe, G. The valve, H, then drops, and retains the liquid in E, and the lever, C, and piston, B, being now depressed, the air is compressed in the direction of the arrows, and forces the liquid through the eduction pipe, I, lifting up the valve, J, and allowing it to drop into its seat again when the lever is again elevated.

This simple and perfect pump is the invention of H. A. Sheldon, of Middlebury, Vt., and was patented by him December 15, 1857. He will be happy to furnish any further information upon being addressed, as above.

Burning of Steamboats.

The steamboats burned on our Western rivers this spring make up a long and dark catalogue. On the 2d inst., another, the *Sultan*, was added to the list, having been consumed near St. Genevieve, while on her passage to New Orleans from St. Louis. By this deplorable event, it is reported, thirty persons lost their lives. Accidents—so called—on steamboats, are becoming as common as before the new steamboat law was passed in 1852. A new steamboat was recently consumed by fire near Louisville, and the account which we read of the accident stated that the boat became unmanageable on account of the *tiller ropes* being burned.

In another column will be found a notice of an invention which would prevent such accidents recurring. Some such means ought to be adopted, or tiller ropes discontinued and chains substituted.

Activity among Inventors.

During the week ending April 10th, there were filed in the Patent Office THIRTY-TWO applications for patents from the SCIENTIFIC AMERICAN office alone, exclusive of a number filed by the branch office of Munn & Co., located in Washington. For the same week there were issued at the Patent Office TWENTY-FOUR patents to parties whose cases were prepared at this office and conducted through the SCIENTIFIC AMERICAN Patent Agency.

The above statistics for a single week shows that the inventors throughout our land are not slumbering.

Friends of the SCIENTIFIC AMERICAN, will you not take the trouble to show it to some of your neighbors and ask them to subscribe for six months or a year? By so doing you will not only aid its circulation, but at the same time you will benefit your neighbors. For the want of correct knowledge upon a single fact on a simple subject, hundreds of dollars may be wasted which could be saved by the perusal of such a journal.

Canada has adopted a decimal currency, which is a move in the right direction, and will greatly facilitate interchange between both sides of the St. Lawrence. The new coins have been prepared in England, and consist of five, ten, and twenty cent pieces.

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Scientific American.

NEW YORK, APRIL 17, 1858.

Canals and Railroads.

Measures are now in progress by the Legislature of New York for the purpose of raising means to complete the unfinished canals of the State, embracing the Erie as a grand trunk, and the Oswego, Chenango and some others as branches. For a considerable period of time, the Erie canal was the longest in the world (360 miles), but it has recently been exceeded by the famous Ganges canal in the East Indies, which is about twice as long, and of far greater. capacity. By connecting the great inland American lakes with the Atlantic Ocean through the Hudson river, the Erie canal raised New York to a high commercial position, as it was for a number of years the chief avenue of inland communication for passengers and merchandise to and from the Northwest.

Just before the advent of railroads, its business had increased so rapidly that it was found necessary to increase its capacity for boats of greater tunnage. To effect this object, an act was passed about twenty years ago, and arrangements were made to carry it out on a grand scale. Various sections of it were then contracted for, and the work of improvement was commenced and went on for some time; but such an amount of political chicanery was developed in the management of it, and such embarrassments were inflicted upon the State finances that the works were stopped, leaving various sections of the canal, at intermediate points, in their original condition. A vast debt has been thereby contracted for canals, amounting at present to about twenty-five millions of dollars, and as the carrying capacity of the Erie is limited by its old narrow sections, no proportional benefits have been derived from those which were enlarged. To obtain the advantages which should be secured by the latter sections, the whole canal requires to be finished to the same extent throughout; this is stated to be the object of the present movement in the Legislature, and is not the first instance of the kind. It is estimated by friends of the measure that five millions of dollars will completely finish all the State canals, but like all government estimates, this one, in all likelihood, is too low by one half. But why should five millions or one million be expended in enlarging the canals; would it not be a sheer waste of money thus to apply it? It would really appear to be so. Canals seem to have outlived their usefulness; they were good enough in their day, but are not adapted to the present state of commercial progress; they have been superseded by railroads. This is so evident that the man who would propose to build a canal now would be laughed at as one beside himself. Would the proposition be any more wise as applied to enlarging the canals? Twenty-four years ago the whole internal passenger traffic of our country was carried on by canal and river navigation, but at the present day a passenger seldom sets his foot on a canal boat. The passenger packets once so numerous on our canals are now scattered along their banks like the mastodon relics of a past age. In twenty years railroads have engrossed the whole inland passenger traffic of our country, also much of the freight trade, and they are yet destined to absorb the whole of it.

In England canals have become obsolete, railroads having entirely superseded them as a means of internal communication. Those made before the railroad era in that country, as a matter of course, are still used wherever they can be without loss, but no new canals have been commenced in twenty-four years. Some of the beds of the old canals have been filled up and converted into railroads; others have had rail tracks constructed on their banks; many have been closed up, and some undertaken in the beginning of the railroad era have been abandoned in the course of construction and left in their unfinished state.

In view of these facts, would it not be unwise to expend more money in enlarging any of our canals—would not the money so expended be thrown away? The wisest policy to pursue, apparently, is to utilize the canals, since we have them, as long as they pay their expenses, allowing them to die out gradually.

Coupled with the project of raising means to finish the State canals, it is proposed by the advocates of the project to impose tolls on our railroads, the "Central" especially, for carrying freight. This proposition is as unjust as it is impolitic, and the more especially as it is intended to devote the tolls for the benefit of the canals. The *Tribune* asks that the Central Railroad should be taxed to contribute half a million of dollars per annum to the completion of the canals. The suggestion is as enlightened and honorable as to ask for the imposition of a tax on a young manufacturing company using the most recent and improved machinery, and doing a profitable business, in order to sustain an old losing company, in paying for the repairs of its antediluvian machinery, and the maintenance of its foggy managers. This is a splendid way to encourage new improvements, and help on the car of progress. It would be as unjust to tax our railroads for the benefit of our canals as the latter for the former—each should stand upon its own merits, to live or perish.

Coal-Burning Locomotives.

Early perceiving the great expenses which were incurred, and which would keep increasing, by the use of wood for locomotive fuel, we long ago (when no other kind was used) repeatedly directed attention to the substitution of coal for wood on our railroads. Stubborn at one period in resisting innovations, most of our railroad directors are now encouraging the use of coal-burning locomotives; they are rapidly increasing in numbers, and at some future day no other kind will be employed. The Illinois Central Railroad Company have now twenty-one of this kind of engines in use, as stated in the late report of the directors, and they save thirty per cent in fuel as compared with wood burners; they are somewhat more expensive for repairs, but, on the whole, effect a large saving. On the Boston and Providence Railroad there are five coal-burning locomotives, constructed under the supervision of Geo. S. Griggs, the master mechanic; and on the Providence and Worcester Railroad there are six engines of the same character, all effecting a very large saving. On the Old Colony and Fall River Railroad, there are three coal-burners lately constructed under the direction of the master mechanic, Mr. H. Bullock. Mulholland's coal-burners are exclusively employed on the Reading Railroad, which does an immense business, and on the Baltimore and Ohio Railroad, the majority of the engines are also coal-burners. Two of Dimpfel's (illustrated on page 332, Vol XII., Scientific American) have been placed on the Wilmington and Baltimore Railroad, and two of Boardman's (illustrated on page 160, Vol. XII., Scientific American) are running on the Jersey City and New Brunswick Railroad.

On a few other railroads, coal-burners have been running successfully for some years, while on others again they have been but recently introduced, and more for the purpose of experiment, apparently, than with a full consciousness that they can ever take the place of wood-burners. But from all we can learn relating to their performances, they effect a saving of from thirty to fifty per cent in fuel expenses. The opinion seems to be gaining ground that this kind of locomotive should be employed on almost all our railroads as a matter of sensible economy. The *Railway Times* states that in Massachusetts alone they would effect an annual saving of five hundred thousand dollars.

On our Western railroads, the locomotives must be constructed to burn bituminous coal, and therefore require a different arrangement of boiler and furnaces from those on the Eastern roads designed to use anthracite coal, that is, the Western engines must burn their smoke, or they never can be used for passenger trains. At one period it was thought that this was an impossibility, hence in England, where wood could not be obtained, charred coal (coke) was exclusively used for fuel. But science and skill have now triumped over the smoke difficulty in locomotives, both in England and America.

Hydraulic Cements and Mortars.

The wonderful powers of durance which some mortars possess is to be explained with ease; but before doing so, let us recollect that the mortar and cement found in Herculaneum and Pompeii, now nearly two thousand years old, is as hard and compact as the volcanic rock on which it is found; and there are many specimens of cements in the museums of Europe, that, after having been under water for centuries, are as good, if not better, than when put down. Recollecting also the vast importance of good hydraulic cements in the construction of lighthouses, breakwaters and piers, and all submarine works, perhaps more attention may be given to the subject than otherwise would by non-interested readers. These hydraulic cements are such as *set* under water, and are not decomposed by its action like ordinary mortars. They are made either from natural or artificial mixtures of carbonate of lime with silica, or silicate of alumina or magnesia. The mineral *dolomite*, when calcined at a moderate heat, exhibits the property of hydraulic lime; and half-burnt lime (containing still a quantity of carbonic acid,) will *set* under water. From a French engineer—M. Vicat—we learn that the hardening depends much on the amount of carbonic acid left in the lime; thus he informs us that a stone that had thirty per cent of carbonic acid left in it after burning, hardened in fifteen minutes, while another, in which there was twenty-six per cent, hardened in seven minutes, and one containing twenty-three per cent, took nine days to become hard. Two varieties in Europe are known as Trass and Puzzolana; and there is an hydraulic mortar used in England known as "Roman cement," made by burning some nodules found in the tertiary formation.

Neither clay, (silicate of alumina,) nor lime alone, will set under water, but if an intimate mixture of clay and chalk be calcined at a moderate heat, and afterwards mixed with water, a hydrated silicate of alumina and lime is formed as a hard mass, and this is hydraulic cement. If the clay or limestone should contain a little alkali, it seems to aid the solidification. There is an excellent cement made near Paris from one part of clay and four of chalk, which are intimately mixed with water, afterwards allowed to settle, and the deposit thus obtained is molded into bricks, which are then dried and calcined at a gentle heat. This hydraulic lime, like the best from natural sources, is entirely dissolved by acids. All mortars, but especially hydraulic ones, are solidified quicker and better under the influences of pressure and high temperature.

When an hydraulic cement is required, it is advisable to collect specimens of the minerals of the district in which work is to be carried on, and send them to some chemist for analysis. This will, in many instances, save much time and money, for we have known cases where Roman cements and other hydraulic cements, have been brought from a great distance to carry on a work, quite close to which there was plenty only wanting the trouble of burning.

Rarey's Method of Subduing Vicious Horses.

All kinds of theories have been formed in relation to the peculiar method of subduing the wild spirit of horses, so successfully practised in Europe by Mr. Rarey, who is generally known as the "American Horse Tamer." At first many attributed his power to such a system of force as should strike terror into the animal, and thus render him more liable to be influenced by his master; but since the declaration of Sir Richard Airey that "there is nothing in the treatment but what any horseman would approve of," it is generally conceded that this influence is obtained solely through some mode of appealing directly to the more generous impulses of the horse, and thus conciliating his affection and confidence. It is well known that animals generally have an almost instinctive passion for certain odors, which appear to have a subduing influence over them. The most familiar illustration of this fact is the power in this respect exercised on horses by the rank and musty smell emitted by the goat, which enables the latter animal to enter the stall and pass between the legs of the most vicious of them. The ammoniacal effluvia concentrated in the warts or excrescences formed on the fore and hind legs of horses, appears to have the same attractive and subduing influence. The oils of cumin and rhodium have these peculiar properties in a more marked degree, and as soon as the horse scents the odor of either of these substances he is instinctively drawn towards them. Mr. Rarey has intimated that his power over the horse is obtained solely through herbs or drugs which operate on the senses of smell and taste, and we have no doubt but that the herbs or drugs employed by him, if not the same, are of an analogous nature to those we have mentioned.

The following directions are given for the taming of horses by the system suggested:—

Procure some finely grated horse castor, and oils of cumin and rhodium, and keep the three separate in air-tight vessels. Rub a little of the oil of cumin upon your hand, and approach the horse on the windward side, so that he can smell the odor of the cumin. The horse will then suffer you to approach him without any trouble. Immediately rub your hand gently on the horse's nose, getting a little of the oil on it, and you can lead him anywhere. Give him a little of the castor on any substance for which he has a taste, and in the most suitable manner manage to get eight drops of the oil of rhodium upon his tongue, and he will at once become obedient to the most exacting commands with which horses are capable of complying. Be kind and gentle to him, and your permanent supremacy will be established, no matter what may have been his previously wild and vicious character. We understand that Mr. Rarey, has been challenged by D. Sullivan, also a horse tamer, (grandson of the celebrated "Sullivan, the Whisperer,") to a trial of his powers in Cork, Ireland.

A Good Method of Rewarding Merit.

In reading the list of premiums to be awarded by the next annual Agricultural Fair of Howard County, Ind., published in the Howard *Tribune*, we observe that the committee having charge have wisely concluded to present to successful competitors in the exhibition, bound copies of agricultural, scientific and mechanical publications (including the Scientific American) of acknowledged worth. We think this system of rewarding merit far preferable to that heretofore observed. A medal or diploma has no actual worth beyond the expression of the favorable opinion of the judges by whom it is awarded; whereas the presentation of a valuable publication, treating of science, mechanism or agriculture, will not only convey the reward intended, but be of great service in cultivating the mind of the person to whom it is awarded. We commend the example of this remote agricultural society to others of a like character who claim a more exalted position.

How to Improve Soggy Potatoes.

At this season of the year, potatoes are very liable to be moist and soggy after boiling, and many a good dinner will be spoiled on account of the bad potatoes. A simple remedy for this is the following:—After the potatoes are sufficiently boiled, and the skins taken off, place them in a dry cloth, and express the moisture by a slight wringing; they will then appear mealy, and taste as well as the best Hibernians.

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Transfusion of Blood in the Horse.

Mr. Farrall, an Irish veterinary surgeon, has published in the Dublin *Quarterly Journal of Medical Science*, a report of his successful experience in the transfusion of blood in the horse, in diseases attended with low vital action. The practice had reference to an epidemic prevalent near Dublin last year, of the nature of influenza, but of a low typhoid character, so debilitating in its influence as to entirely prostrate in strength the most healthy and vigorous horses in a few hours after the appearance of the first symptoms of the disease. With those cases which had been bled, an average amount of success only was obtained, it being found that everything that could be done to restore the vital powers was, in a majority of cases, useless, save in the instances of young and vigorous horses. In three of the cases the patients had been bled, and were so much weakened that they could scarcely walk. In the fourth case, a drastic purgative had been administered, causing super-purgation and great prostration of strength. In each of the cases the condition of the patient was nearly similar. The following is Mr. Farrall's account:—

"Having selected a healthy young horse from which to obtain the blood to be transfused, I opened the jugular vein in the patient and in the healthy subject, and having inserted the tube into the vein of the healthy horse, I placed the india rubber tube in the tin trough containing the hot water, to maintain its temperature, and the other curved tube into the descending portion of the vein in the patient. As soon as the current from the healthy horse had completely expelled all atmospheric air, the blood flowed freely from the vein of one horse into that of the other in an unbroken current. The average quantity of blood transferred in each of these cases was about three quarts. I observed no particular symptoms to follow from the transfusion until two quarts or more had passed from one to the other; but as soon as about that quantity had flowed into the diseased subject, there appeared to be produced an amount of stimulation indicated by an increased degree of action of the heart, at the same time the pupils began to dilate, and the countenance evinced an anxious expression. My former experiments led me to watch with great care the progressive dilation of the pupil, and I deemed it expedient in each case when this symptom was well developed, to compress the tube so as to diminish the current, and allow the transfusion to proceed more gradually. Occasionally I almost completely interrupted the current until the subsidence of this symptom, and I found that when about three quarts had been transfused, any additional quantity was followed by unpleasant symptoms, which indicated the necessity of stopping the operation, On removing the tube and closing the vein, all symptoms of irritation gradually subsided, and the pulse, from being rapid and irritable, became slower, stronger and fuller, gradually approaching the healthy standard. In every instance I found action in the healthy animal sufficiently strong to propel the blood into the vein of the patient; but if it be found requisite, the circulation may be strengthened by giving the horse from which the blood is to abstracted, a little brisk exercise immediately before the performance of the operation.

In each of my four cases the reaction was steady and progressive. The natural warmth of the extremities was gradually restored, and in the course of ten or twelve hours the patients presented other equally unmistakable symptoms of amendment, such as returning appetite, more quiet and steady respiration, cheerfulness of countenance, willingness to move about, and in a short time they were pronounced cured."

The Manufacture of Coal Oil in Central Ohio.

Our friend, J. E. Holmes, of Newark, Ohio, sends us some valuable statistics in relation to the manufacture of coal oil in this region from the fine quality of cannel coal which the surrounding country produces. The first establishment for the manufacture of coal oil in this portion of Ohio was started some two years since by Dillie & Robinson, in Perry co., who have recently increased their works to such an extent as to enable them to manufacture about 350 gallons of oil per day, a more than usual proportion of which is burning oil of superior quality. The vein of coal from which their works are supplied is of an excellent quality, but, like most good coal beds, very thin. In addition to this, the senior member of the firm is making arrangements to start similar works at Flint Ridge, in Licking county, which will be supplied by the extensive and available vein now in possession of the Great Western Oil and Coal Company, of Newark, Ohio. This latter company furnish Newark with gas, which is said to be unsurpassed for its brilliancy, and will soon be prepared to produce one thousand gallons of oil per day.

The Newark Coal Oil Works, under the management of Messrs. Holmes & Hull, are also increasing the capacity of their works; and we are assured by the first-named proprietor that they will shortly be able to produce three hundred gallons of pure oil per day. The demand for this kind of oil, both for burning and lubricating purposes, would seem to justify the assertion that it will be generally used for both. It possesses but little odor, is of the same specific gravity as water, and is limpid in appearance. Mr. Holmes informs us that a single application of this oil to the slides of a large "iron planer," having a travel of 20 feet, and a width of 4 feet, lasted a whole week.

It appears that one portion of the fissures or fractures in the beds of cannel coal situated in central Ohio, have one general direction or bearing, which is about five degrees west of south, the blocks being nearly square, and varying from two to three feet. This fact led Mr. Holmes to suppose that, at the time the deposit was hardening into coal, the magnetic attraction of the pole might have had some influence in producing this peculiarity. This observation has been made in the fissures of all coal beds, and they run in the same direction nearly all over the world. We do not profess to account for this, but we should not like to attribute it to polarity.

Laboratory—No. 3.

Affinity.—Every science. every art, every trade, has peculiar expressions or terms to signify certain things, certain effects, and certain results; but in every-day life these things are differently expressed, or have a different meaning. Thus the word *pie*, to you and me, dear reader, means some viand, savory or sour, as the case may be; but the printer uses the word *pi* to designate a pell-mell of type, all of a heap or wrongly placed, thus—ri ɔ.eu ∞ ǝpiʇɔr. A miner's name for a basket is a corf or corve; a painter calls a paint-brush "a tool." Similar technicalities will be found in every branch of industry, and learning them is one part of the duty of an apprentice. In chemistry we have the word *affinity*, which means a liking of one substance for another, so that it will unite, forming by this union a body which is neutral between the two, whose affinity for each other causes their combination. Thus, caustic potash has a strong affinity for nitric acid, which is also very caustic and corrosive, but when combined, the harmless material, saltpeter (nitrate of potash), is the result. It is the affinity of iron for the oxygen in the air which causes it to rust (to produce oxyd of iron); and to prevent iron from rusting we cover it with oil, which, acting as a varnish, shuts out the oxygen. Gold does not rust, because it has no affinity for oxygen; so no coating of oil is necessary in this case. Some substances have a greater affinity for a particular material than the body with which it may be already united; when such is the case, and the addition of the former substance be made, the two bodies having the greatest affinity for each other unite, and that which has the least affinity is displaced. This is illustrated when tartaric acid is added to carbonate of soda; the tartaric acid unites with the soda and turns out the carbonic acid, as is seen in mixing a seidlitz powder. Carbonic acid being a gas, causes the effervescence. If you have only affinity for philosophy, you will read this with attention; if not, there is no affinity between our ideas.

Recent Patented Improvements.

The following inventions have been patented this week, as will be found by referring to our List of Claims:—

Combined Boot-Jack and Burglar Alarm.—This invention consists in the use of two adjustable movable jaws and a spring treadle, attached to a bed or plate, and used in connection with a catch. These parts are so arranged that the treadle is made to perform the double function of operating the jaws when forced down by the foot, and the implement used as a boot-jack, and also of sounding an alarm when the apparatus is used for that purpose and placed in proper position against a door. F. C. Goffin, of Newark, N. J., is the inventor.

Cross-cut Sawing Machine.—The object of this invention is to obtain a simple and economical device for sawing logs transversely into suitable lengths for fire-wood; one that can be operated by hand with a moderate expenditure of power, readily adjusted to the log, and easy of manipulation generally. H. H. Potter, of Carthage, N. Y., is the inventor.

Removable Ramrod for Revolvers.—This invention relates to that description of revolver whose chambered cylinder rotates on an axis parallel with the bore of the barrel. It consists in a novel, simple and effective method of applying a rammer to ram the charges in the chambers of the cylinders, and is the invention of H. S. North, of Middletown, Conn., assignor to Edward Savage, of the same place.

Splitting Wood.—Franz Noette, Brooklyn, N. Y., has invented a machine for this purpose, which consists of an intermittingly rotating table and plunger provided with cutters, arranged so that wood may be sawed into proper lengths and split into kindling wood with great facility.

Saw Gummer.—M. Ernsberger, of Bremen, Ohio, has invented an improved device for this purpose, which consists in the employment of a stock provided with set screw clamping it to the saw, in connection with a burr cutter peculiarly constructed and applied to the stock in such a manner that the same may be properly guided or held in proper position while in operation, and also fed to its work with the greatest facility, the whole forming a simple and efficient implement, well adapted, and more especially designed for gumming circular saws.

Gas Pipe Coupling.—This invention consists of an open coupling for gas and water pipe, whereby the necessity of cutting away a portion of the main pipe and forming a running joint to attach the branch pipe is avoided. The operation of attaching branch pipes is also greatly facilitated, and labor and expense lessened, and facilities for cutting off the supply by detaching the branch and plugging up the main, likewise afforded. This is certainly a simple and good coupling, and is the invention of W. Hudgin, of Washington, D. C.

Protecting Tiller Ropes of Vessels from Fire.—Should a ship take fire, so long as the rudder is under the command of the pilot there is a chance to still preserve the passengers and cargo, but the moment the tiller ropes are burnt the ship must be given up to the mercy of the fire, and the tempestuous waves. This invention is designed to prevent this calamity by fitting the tiller ropes in metal tubes, which are again enclosed in tubes of larger diameter, so that a space is left between them that can be filled with any non-conducting material. These tubes are to extend from the wheel-house to the tiller, so that the whole length of the ropes will be protected. W. Y. Gill, of Henderson, Ky., is the inventor.

Ice Pitcher.—This invention relates to that description of pitcher which is surrounded with a hollow jacket, or, in other words, is provided with double bottom and sides. Such pitchers as usually constructed, have the inner part or lining soldered or otherwise attached at the top part of the outer casing, and in consequence when the inner part or lining is worn through or accidentally perforated, as it generally is, while the outer part or lining remains good, there is no, or very little, facility for repairing it, and the pitcher becomes in a measure worthless. Ernest Kauffman, of Philadelphia, has invented one which consists in fitting the inner part or lining into the outer part or case, with screw threads or their equivalents, which provides for making a tight joint between the two parts when together, and for the ready removal of the inner part or lining for the purpose of replacing it by a new one or repairing it when damaged.

File Cutting Machine.—It has often been attempted to cut files with accuracy by machinery, but we are not aware that any of the devices proposed, have been able to overcome the chief difficulty until the one of which we will try to give some idea, was invented by J. Nelson Jacobs, of Worcester, Mass. This difficulty is, that all files having somewhat of a curved profile, when they are cut with a chisel having a definite stroke, it cuts deeper into the raised part of the curve than any other part, and so weakens the file, now this machine cuts the file to the same depth, whatever be its profile, by means of a profile model which acts as a stop to the chisel, and so allows it to cut only the right depth the whole length of the chisel. Fine or coarse chisels can be cut with equal facility on this machine, and also any size. We have seen some files which have been cut by this machine that were to all appearance equal to any hand cut, and much more regular in the distances of the serrations.

Reefing Sails.—In most of the plans heretofore used for reefing topsails from the decks of ships, the sail has been rolled on a roller, or, as it is termed, a "jackyard," attached to the yard, to avoid the necessity of dividing the sail vertically, as has been done in most, if not in all cases where the sail has been rolled on the yard itself. The advantage that would result from rolling the sail upon the yard itself, if it could be done without dividing the sail, and the yard be made to work freely, are very generally admitted by nautical men, and the object of this invention is to obtain this result. The method which the inventors, Lewis Higgins, of Jersey City, N. J., and Alexander Brown, of New York, pursue to attain this end is simple. They suspend the yard by means of a double C-shaped truss frame from the mast, and between the two C's a number of small rollers are placed in which the yard can rotate freely and between which and the yard the sail can be snugly coiled. Thus all necessity for dividing the sail is taken away, and a very good and simple method of reefing sails from the deck is provided.

Railroad Indicator.—This invention consists of a transparent faced box placed in each car. In this box two square rollers with a flexible endless chain of cards having the different stations printed on them, are arranged. A forked lever extends down from the upper roller to the rails of the track, and comes in contact with inclines at the different stations. These inclines raise the lever, and cause it to turn the upper roller, and thereby bring cards separately and successively opposite the transparent front of the box. When the card thus appears to view, the passengers read the station to which they have arrived. With this arrangement provision is made for sounding a bell to call the passengers attention as soon as the card comes in view. The endless chain of cards is operated both in the forward and return trips of the train. This appears to be a very useful and perfect arrangement, as much confusion and annoyance to passengers and conductors will be avoided by its use in cars. John M. Harvey, of Amsterdam, N. Y., and N. J. Becker, of Florida, N. Y., are the inventors.

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Correspondents

G. B., of Mich.—The plan you suggest for preventing accidents to locomotives and steam vessels is of no value whatever. The re-acting force of steam on the object from which it escapes in the manner you indicate would be so slight as scarcely to effect the momentum of a locomotive.

J. B. C., of Ohio.—Address E. G. Hyde, No. 15 Maiden lane. this city, regarding auricles for the deaf.

A. S., of N. H.—Silver precipitated from a chloride solution by cyanide of potassium becomes the cyanide of silver, the common electro-plating solution. From this you can precipitate the silver, by feeding in "feather zinc;" the silver will fall to the bottom of the vessel, as the zinc dissolves. You must then wash the precipitate, dry it, and smelt it in a crucible, and you will thus recover the pure silver.

S. W., of Miss.—The design for running both stones of a grist mill in the manner described by you has been frequently tried and abandoned. No actual benefit can be effected by such a course.

J. W. P., of Ga.—The tides are produced by lunar attraction alone. Centrifugal force has nothing to do with them.

N. B. R., of C. W.—Clock and similar springs are generally tempered in oil, or various mixtures of oil and tallow, which give a more equitable degree of hardness and elasticity than is given by water. Their perfection, however, in this respect, depends greatly upon the skill and judgment of the operator.

M. M. H., of Mich.—On page 147, Vol. VI., Sci. Am., you will find a "hygroscope" illustrated and described. It resembles the cheap barometer to which you refer, excepting that it has a cloth steeped in a hygrometric salt attached to it in place of an air chamber. Your instrument, composed of an arm of dry wood and a piece of lead attached to it as a substitute for an air chamber, is a barometer, when it indicates the approach of a storm. A hygroscope only measures the amount of moisture in the atmosphere.

H. W. D., of N. C.—You state that you put half a gallon of flaxseed into your sixteen horse power boiler, and have ever since been troubled with priming. You must blow off at the upper and second cocks to remove some of the mucilage, as you have used far too great a quantity. One evil connected with the employment of all mucilaginous substances in steam boilers is their tendency to cause the water to prime and pass over into the cylinder. For this reason we have generally recommended the use of soft water for feed where it could be obtained. Mucilage in the water of a steam boiler seems to cause water to adhere to the atoms of steam as they escape, thus causing the "priming."

A. P. B., of Ohio.—As no water wheel gives out, by 20 per cent at least, as much power as that of the water employed to drive it, of course it is impossible to make a perpetual power of the same water by pumping it back and using it over again. But although the wheel did give out the whole power of the water, it would certainly be absurd to employ it to work itself, as you propose.

H. B., of Mass.—Warming buildings, by arranging the steam or other pipes from which the heat is derived, immediately beneath the floors of their apartments, has long since been done in the precise manner suggested by you.

H. F., of Mich.—Producing undulations on the surface of liquids, in order to expose a greater extent of their surface to the hot or cold air above, has already been done. Distributing water in steam boilers for the purpose of heating the same in the way you indicate, is substantially the same as Dutton's mode of distributing water to produce ice.

J. L., of Pratt's Hill—The placing of the steam chambers of boilers below the water level, or, in other words, submerging them, is not new. The only advantage that can possibly result from dispensing with the crank would be greater uniformity of motion. Every substitute yet invented has, however, been liable to other very serious objections, and we think the crank will continue to hold its own.

G. W. C., of Mich.—Mr. Piesse is correct when he refers to water as an exception to the law of expansion by heat only under certain conditions. At a temperature of 42° Fah., water attains to its greatest density; when cooled to 32° Fah., it expands, forming ice, which floats on the warmer water below. He means nothing more than this in the article to which you refer.

J. McC., of Ill.—Naphtha, or what you term "oil of coal tar," has been successfully employed for preserving timber. Grant's patent fuel has never been employed in this country, so far as we know.

S. M., of Mo.—The idea of placing a screw in the bow of a boat for the double purpose of drawing her and displacing in a certain degree the resisting water in front, is not new. The first application of a screw propeller for such a purpose was made by D. Fitzgerald, of this city, eleven or twelve years ago.

W. W. H., of Ohio.—Bar magnets weighing more than two pounds rarely support more than ten times their own weight. Small magnets are proportionably stronger than large ones; one weighing sixty grains has supported sixty times its own weight.

W. R. M., of N. J.—There are only two kinds of barometers in use known to us, viz., the column of mercury thirty inches high confined in a glass tube, and the "aneroid," which indicates the relative pressures of the atmosphere by the swelling and contracting of the vacuum chamber. Some of the latter have thermometers attached to them.

Money received at the Scientific American Office on account of Patent Office business, for the week ending Saturday, April 10, 1858 :—

G. & G., of Pa., $30 ; C. L. S., of Ky., $30 ; H. C., of R. I., $50 ; M. W., of Ohio, $50 ; J. B., of Ind., $25 ; F. & W., of N. Y., $27 ; G. R., of L. I., $30 ; N. S., of La., $25 ; J. M. C., of Wis., $30 ; G. K. & Co., of Ill., $55 ; J. M. H., of Pa., $55 ; T. W., of N. Y., $55 ; A. M. P., of N. Y., $30 ; J. J. P., of Ohio, $55 ; A. W. W., of Conn., $30 ; L. L. C., of Conn., $27 ; N. H., of Pa., $30 ; R. C., of Ohio ; $32 ; W. W. L., of Ohio, $70 ; M. K., of N. J., $30 ; G. W. D., of Iowa, $20 ; N. P. A., of N. Y., $30 ; J. B., of N. Y., $20 ; G. B. B., of Conn., $20 ; S. T., of Mich., $30 ; A. S. S., of Mass., $30 ; C. C., of R. I.. $25 ; J. C. S., of Mass., $100 ; W. G. B., of N. Y., $30; G. W. C., of Mich., $30; F. & Co., of Conn., $30 ; W. H. M., of Iowa, $20 ; M. G., of Pa., $30 ; J. H F., of Vt., $35 ; J. D., of Mass., $30 ; W. M., of Ill., $32; H. G. B., of Mich., $30 ; A. O'D., of Canada, $25 ; W. A. J., of La., $55 ; W. C., of Mass., $130 ; A. A. H., of Ohio, $35 ; H. O. A., of La., $55 ; O. L. C., of Ill., $35; F. & L. A. C., of N. Y., $25 ; A. S., of Ohio, $50 ; J. P. S., of N. Y., $30 ; B. F. J., of Mass., $25 ; G. & D., of N. Y., $30 ; S. W. W., of L. I., $25 ; G. H. K., of L. I., $35 ; W. M. L., of Conn., $25 ; L. F., of N. J., $25 ; G. G., of Ill., $30.

Specifications and drawings belonging to parties with the following initials, have been forwarded to the Patent Office during the week ending Saturday, April 10, 1858 :—

H. & A., of Miss. ; L. L. C., of Conn. ; T. D. L., of S. C. ; S. W. W., of N. Y. ; N. S., of La. ; J. B., of N. Y. ; O. T. W., of Pa. ; G. & G., of Pa. ; L. E., of Mich., (2 cases); J. B. McC., of Mo. ; J. H. F., of Vt. ; W. H. M., of Iowa ; N. P. A., of N. Y. ; G. H. K., of L. I. ; G. W. D., of Iowa ; C. C., of R. I. ; J. O., of N. Y. : L. R., of Mass. ; W. W. W., of Conn. . W. M., of Ill. ; H. G. B., of Mich. ; B. A. B., of N. Y. ; A. O'D., of Canada ; O. L. C., of Ill. ; J. F. B., of Conn. ; F. & L. A. C., of N. Y. : T. W., of N. Y. ; L. F., of N. J. ; L. T., of N. Y. ; G. & D., of N. Y. ; B. F. J., of Mass.

IMPORTANT TO INVENTORS.

AMERICAN AND FOREIGN PATENT SOLICITORS.—Messrs. MUNN & CO., Proprietors of the Scientific American, continue to procure patents for inventors in the United States and all foreign countries on the most liberal terms. Our experience is of twelve years' standing, and our facilities are unequaled by any other agency in the world. The long experience we have had in preparing specifications and drawings has rendered us perfectly conversant with the mode of doing business at the United States Patent Office, and with most of the inventions which have been patented. Information concerning the patentability of inventions is freely given, without charge, on sending a model or drawing and description to this office.

Consultation may be had with the firm, between nine and four o'clock, daily, at their principal office. 128 Fulton street, New York. We have lately established a Branch Agency on the corner of F. and Seventh streets, Washington (opposite the United States Patent Office). This office is under the general superintendence of one of the firm, and is in daily communication with the Principal Office in New York, and personal attention will be given at the Patent Office to all such cases as may require it.

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Communications and remittances should be addressed to MUNN & COMPANY,
No. 128 Fulton street, New York.

The annexed letter from the late Commissioner of Patents we commend to the perusal of all persons interested in obtaining patents :—

Messrs. Munn & Co.—I take pleasure in stating that while I held the office of Commissioner of Patents, more than one-fourth of all the business of the office came through your hands. I have no doubt that the public confidence thus indicated has been fully deserved, as I have always observed, in all your intercourse with the Office, a marked degree of promptness, skill, and fidelity to the interests of your employers.

Yours, very truly, CHAS. MASON.

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WANTED—AN AGENCY FOR THE SALE OF some patent article, or patent rights. The undersigned, who has much business experience, and a part of his time being now unemployed, would like to make an arrangement for the sale of some real valuable and useful patent article or right, that can be disposed of in this city or vicinity. For manufacturers or patentees this is a rare chance for establishing an agency in this city. Satisfactory references given. Call upon or address A. B. BENNETT, 18 Liberty street, New York.

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March 31, 1858. Watertown Arsenal, Mass.

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Science and Art.

Patent Law Changes.

The recent discussion of proposed changes in the Patent laws in our columns has attracted considerable interest among our readers, and we have received quite a number of communications upon this subject. The leading suggestions of their authors are but confirmations of the views we have already expressed, and therefore we do not think we are justified in devoting space to their publication. We are much obliged for these communications. They are cheering proofs of the correctness of our views on this important subject.

Ericsson's Hot Air Engines on the State Canals.

We notice in the reports of the doings of the Legislature of this State, as published in the New York *Herald*, that "Mr. Armstrong has introduced a bill in the Assembly to incorporate a company with the title of the 'Ericsson Manufacturing and Navigation Company.' The corporators are John Ericsson, J. B. Kitching, Cornelius H. Delameter and James Hogg; and their objects and purposes are the building, equipment and propelling of vessels on the navigable waters of this State, by means of engines whose power is heated air or caloric, as now patented, or as may from time to time be patented by Ericsson or his associates. Their capital stock is to be $500,000, in shares of $100 each. They are authorized to use boats with this motive power on the canals, provided they put them on within eighteen months from the passage of the act. In that case they have the exclusive privilege, for thirty years, of towing boats carrying freight and passengers on the canals of the State; provided their boats are so constructed as not to produce any greater wash or wear and tear to the canals than is produced by the boats now in use. The boats used are to receive the sanction and approval of the Canal Commissioners, and submit to such restrictions as to speed, right of way, &c., as is necessary to the preservation and safe navigation of the canals."

It is desirable, unquestionably, to introduce some system of propulsion on our State canals more in harmony with the spirit of the age; but we must condemn all attempts of this character. They are at war with all true notions of progress, and will meet with no encouragement from practical legislators. If the Ericsson scheme is best adapted to change the present system, we shall cheerfully advocate its introduction, but not as an exclusive monopoly. Ericsson is secured in the full enjoyment of his rights as an inventor under the grant of Letters Patent. He has but to show by proper experiment that his plan is best, and it will, no doubt, be adopted, and the privilege will belong to him so far as the right to build and operate his inventions is concerned. Such an attempt as this to obtain a complete monopoly of the State canals might have been tolerable, if proposed in the days of Prince Rupert and Jonathan Hull; but in this stirring age of improvement, a "thirty years exclusive privilege" smacks of a past generation.

There are some inventors so impatient of success that they are never satisfied to let their discoveries stand out upon their own merits. They must be continually nursing up some magnificent scheme—some giant enterprise—through which to startle a whole world. These comet-like effusions dazzle but for a moment, while the light of a steady progress continues to shine on, not a whit the less sure, though those eccentric comets may have momentarily intercepted its rays.

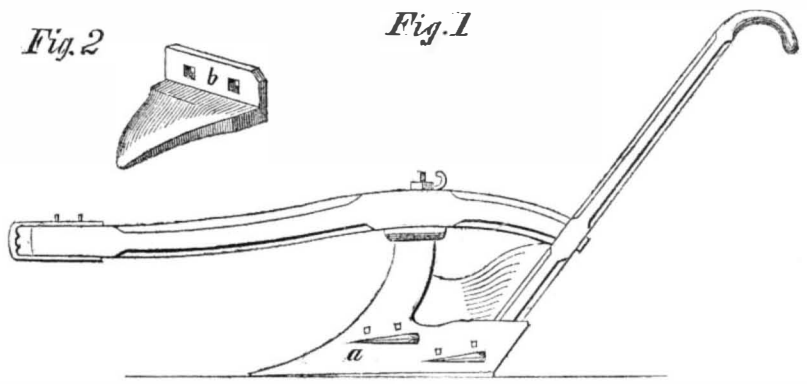
Improved Plow.

As every one engaged in the cultivation of the soil is interested in all improved implements for this purpose, we present to their attention two plows which are specially designed for the purpose of superseding the harrow and the spade. It is well known that it is of the utmost importance to the farmer that the soil should be broken up as finely as possible, so that every particle may be exposed to the invigorating action of light, and also may absorb from the air much of the material which will enable it to sustain the plant. The ordinary method of breaking up the soil is by cross-plowing or by harrowing, but this plow cuts and breaks up the ground as well as if it had been harrowed.

VAN LOAN'S IMPROVED PLOW.

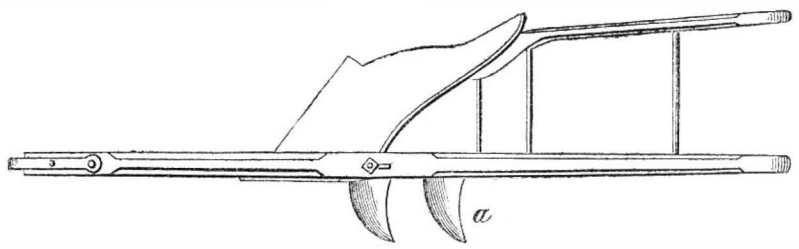
Fig. 2

Fig. 1



The improvement consists in attaching one or two horizontal cutters to the land side of the plow, seen at *a*, Fig. 1, which is a side view of the plow, and Fig. 3, which is a top view of the same. These cutters are attached to the landside of the plow by means of a flange, *b*, Fig. 2, and bolts are passed through this flange, and so the cutters are screwed to the

Fig. 3



plow. There is a slot in the landside of the plow, through which the cutter is passed, and the bolts are put through the side of the plow, and passed through the flange inside. By taking off the bolts, the cutters are easily removed for sharpening, and they can again be easily attached, or they can be removed entirely when necessary, as when plowing stony ground.

This plow was patented Feb. 16, 1858, by the inventor, W. W. Van Loan, of Catskill, N. Y., who will dispose of rights for the Atlantic States, and will be happy to furnish any further information that may be desired.

DENNIS' SHOVEL PLOW.

Fig. 1

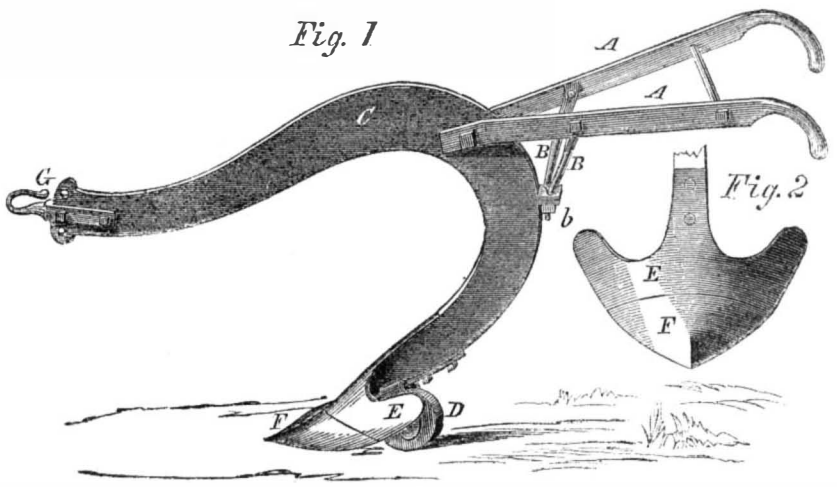


Fig. 2

The adaptation of the plow to cultivating, as well as turning up the ground, is a valuable application; and those plows which break up the ground without leaving a furrow, are called from their shape, "shovel plows." They are used for cultivating cotton and sugar, and sometimes, when the ground is light, for breaking up, as in the sandy soil of South Carolina.

The plow which is the subject of our engraving is the invention of Paul Dennis, of Bemis Hights, N. Y., and was patented by him February 23, 1858. It goes through the ground at any required depth, and leaves the ground quite mellow, with all the weeds cut up.

A A are the handles, secured to the beam, C, by means of the straps, B B, bolted to it at *b*. The beam, C, has an adjustable hook, to which the horses are attached at G, that can be raised or lowered as convenient. The mold-board, E, is screwed to the beam, and is shaped as seen in Fig. 2, the earth rising up it, and falling through the arches at its edge into the furrow again. The share, F, is also connected by an under plate, and screws to E. In consequence of the arrangement of the parts, the share can be easily removed, to be sharpened or repaired, and the mold-board does not scatter the earth, as is common, but passes it back over itself into the furrow.

It is a most convenient and useful shovel plow for general purposes.

Any further particulars can be obtained from the inventor as above.

Mosier's Sod Corn Planter.

In our description of this invention on page 236 of the present volume, we omitted to state that it was especially applicable for *sod* corn planting, and that it could be fixed to the fore axle of a cart as well as to any special wheels. The inventor, P. C. Mosier, resides at Homer, Illinois, and not at Homer, Michigan, as we previously stated.

THE long pilasters for the U. S. Treasury building, weigh from forty to forty-five tuns. It requires to draw them ten heavy yoke of oxen and four stout horses. It is stated that the cost of each pilaster, when in place on the building, is $2,500.

Literary Notices.

VENTILATION IN AMERICAN DWELLINGS—By Dr. D. B. Reid. Wiley & Halstead, New York.—The author of this work, who is, without exception, the greatest authority on ventilation, has here given us the results of his observations while in this country, and many practical suggestions by which we all may profit. By an extraordinary contradiction, the inhabitants of this country—enjoying as we do one of the most healthy climates in the world, our chief cities placed within reach of the Atlantic breezes, or else on the banks of some gigantic river, with every advantage of climate and geographical position—yet want the animal force, the rude health, and robust constitutions of our Saxon and Celtic ancestors. "Why is this?" is a question often asked, and the truthful answer, "bad ventilation," is as often given, yet no one attempts to remedy the matter and begins to ventilate his own house. In summer we expose ourselves to continual drafts, and in winter crowd together in stifling hot rooms, and so take every possible opportunity of committing modified suicide. One great reason or cause for this neglect is because ventilation as applied to houses and small rooms is not understood, and the opening of a window or a door is considered a sufficient ventilator. Dr. Reid teaches us, however, that ventilation consists not in drafts, but in the regular supply of the necessary quantity of fresh air into a room, and in suitable means for the egress of the foul. The book now published contains the application of this principle to dwelling houses of all kinds, shapes, and sizes, from the marble palace to the log cabin. There is an excellent and valuable chapter on the ventilation and disinfection of the sick chamber, and each subject is illustrated with full and lucid diagrams, so that any person with common sense may ventilate his own house, and the slight amount of trouble it will involve will be amply repaid by increased health and spirits. We can only say, in conclusion, that the subject is one of personal interest and national importance, and Dr. Reid has done a great service to the American people by the publication of this work. We hope it will be read by all, and that its advice will be generally taken. The system may not be the best, direct experiment can only test this, but it is a *system* for the ventilation of American dwellings, and as such we are thankful for it. At some future period we may make some extracts from this work for the benefit of our readers.

THE MAGICIAN'S OWN BOOK—Dick & Fitzgerald, New York.—This is a well arranged and admirably gotten-up book, explaining the majority of tricks performed by so-called magicians, and illustrated with a great number of engravings. Much useful information is also introduced, and the philosophy of the tricks is fully explained. It is a book that should be possessed by every boy, as it will teach him much, and keep him out of mischief for many an idle hour, besides helping to endow him with the faculty of promoting the enjoyment of others.

THE ECLECTIC MAGAZINE for April. W. H. Bidwell, editor and proprietor, New York.—This magazine contains handsome portraits of the Prince and Princess of Prussia, a very able article on the great French orator Bossuet, and many others of universal interest and great ability.

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